The OPEN-AIR GUIDE.

THE OPEN AIR GUIDE

BY

JOHN R. ASHTON,

Holiday Fellowship (General Committee); Ex-Secretary, Ramblers' Federation (Manchester District); Member of Council, Peak District and Northern Counties Footpath Preservation Society; Rucksack Club, Wayfarers' Club, etc.

AND

F. ARNOLD STOCKS, M.Sc., A.I.C.,

Author of "Saturday Afternoon Scouting," Deputy Camp Chief, South-East Lancashire Boy Scouts' Association; Camping Club of Great Britain and Ireland; British Empire Naturalists' Association; Member of Council, Ramblers' Federation (Manchester District), etc.

JOHN HEYWOOD LTD.,
121, DEANSGATE, MANCHESTER;
20/22, ST. BRIDE STREET, LONDON, E.C.4.

First Published - - 1928
Second Edition - - 1929

CONTENTS.

	PAGE
PREFACE	5
WALKING AND CLIMBING	9
THE WAY	23
THE CAR AS AN AID TO WAYFARING	33
CAMPING FOR THE WAYFARER	37
MAPS	49
SCENERY	63
WAYSIDE ARCHITECTURE	71
WEATHER LORE	81
TREES	91
BIRDS	103
WILD ANIMALS	119
WILD FLOWERS	125
THE NIGHT SKY	129
PHOTOGRAPHY	135
FIRST AID FOR THE WAYFARER	145
SOME LEGAL POINTS FOR WAYFARERS	157
ROAD PASSES OF GREAT BRITAIN	163
MOUNTAINS OVER 2,500 FT.	166

PREFACE.

"And yet, in some slight measure every man must be his own artist, since he is fated to get, in any case, only some qualified visions of places and other things, he may as well take thought in time to get his visions as fresh and undeformed as may be."

"The Right Place," C. E. MONTAGUE.

WAYFARING is the cultivated art of travel. It may be practised by any of the known methods of movement from one place to another and reference to most will be found in this book.

The average townsman when in the country feels that though he observes great beauty and the essential quality of country life, he is but a spectator, and vague longings to get closer, to take a part in the spectacle, stir within him. Modern easy transit gives him the power to visit nature more often than before and every year sees greater numbers leaving the towns for a half-day or day somehow or other, in some place where they can satisfy their desires for beauty, rich or austere. And yet the crowd miss the real thing. They take their town atmosphere with them. In this book we have tried to show the better way of simple knowledge of country ways, of more primitive, older, yet skilled means of life; a humble approach in a spirit of adventure and enterprise. We have therefore set out the various interests which have engaged our minds whilst travelling by car, cycle and foot, on roads, paths, moors and mountains in Great Britain.

The work has been attempted as a result of a peculiar combination of interests embracing every chapter written. Association with many walkers, campers and nature lovers generally, showed that whilst information on any kindred subject could be had by reference to a particular book, there was no guide to that book, nor was there any one book dealing in a simple introductory way with all the kindred subjects. The beginner plodded along slowly acquiring tit-bits of knowledge from experience or a chance piece of reading. Unless good fortune gave him a companion of experience, he might well miss "the great illumination." As a walker he might spend a vigorous year or two exulting in the pride of covering miles of earth, rock, heather and peat; in the glory of the

air and the sky, the changes of weather and all the physical joys of the great game. But this passes. There is a limit to man's effort and the practical difficulties in modern life of keeping the top pitch of condition set bounds to his revelling in violence. He must in time be content with something less than the highest physical achievement. Interest fades with the physical decline. Other pastimes wherein self criticism can be satisfied appeal more strongly. Cycling and motoring offer analogies. It is a common motoring experience for a man to spend his first few months of driving in a quest for speed, mileage per gallon, and like matters. For the time the business of driving is so absorbing and novel that he needs nothing else. But with experience comes ease of control, even gear changing is simple, and driving in itself becomes monotonous, insufficient to draw a man out for a day. Motoring must become more than a matter of movement, it must be a means to an end, a means by which other interests may be studied and enjoyed.

Here is the *raison d'être* of our work. We want to point the way to a full appreciation of Nature, to guide the beginner to the right sort of paths, to give him the keys which will open gates but not to open gates for him. It is a book of beginnings, of tentative explorings, not of exhaustive discussions. Our aim is a modest one. Each chapter is a skeleton design, suggestive rather than dogmatic. The beginner who gets hold of the skeleton should find the filling in a simple business of acquiring facts, using the bibliography at the end of each chapter. The mind cannot usefully absorb a mass of information without some framework erected, but once this skeleton is built up, additional knowledge is gained easily because the relative position and significance of the facts are already known.

It may be argued that we would make " Jacks-of-all-Trades—Masters-of-none," but our theory has recently had the backing of Mr. Hugh Walpole, who stated in a lecture that it is good for a person to be expert on one subject but to have a thousand other interests. Knowledge leads to more knowledge ; the subjects of our chapters are all interwoven in the great craft of wayfaring ; acquaintance with one will add to one's appreciation of another.

We could have gained the stamp of authority by getting experts to write individual sections, but we think the book would then have had less value for the beginner

and more for the experienced hand. Our own novitiate is near enough to help us to understand the beginner's troubles, so we have been bold enough to write the book without outside help, other than the valuable advice and assistance of a few friends to whom we now make our acknowledgments.

We have omitted railway-faring and flying, for kindred reasons. They are both rather remote from Nature, precluding the close contact which is the essence of intelligent travel, remaining means of getting about, utilitarian rather than æsthetic. Such observations as may be made from a train can almost all be made from a car, or on foot. The exceptions are mentioned in a passage so stimulating that we have withdrawn from any attempt to add words to it.

"All inland travel is strictly like this of the mountaineer's. . . . Especially so is travel by railways." (See "The Right Place." C. E. Montague, p.p. 122 *et seq.*)

So we offer our little book as it is in the hope that it will help somebody to a bigger grasp of the finest sport of all—wayfaring, in which nobody is worsted by another's triumph; in which, indeed, the biggest triumphs are over our own limitations.

F. A. S.
J. R. A.

WALKING AND CLIMBING.

"To walk, perchance to climb."
"Hamlet," Revised.

WE are not concerned with those who walk on roads as fast as they can from one place to another. They are excellent fellows, no doubt, but not wayfarers. This section is for those who roam. Most wayfarers begin by taking country walks of a mild type and pass from that to more ambitious routes over moorland or hilly country. This may be defined as rambling. A more advanced type is fell walking wherein the summits of our British hills are attained. There are walking routes up almost every peak in Great Britain but inevitably the fell walker sooner or later gets his or her hands on rock and scrambling begins. Henceforth he finds a fascination in choosing routes up mountains which will give him boulders and low crags at a moderate angle, instead of the grass and heather slopes of the walker's way. It may be that he will remain content with this excellent sport, but it is very likely he will be tempted to join a roped party on a rock climb. He may even become a rock maniac, one of those people who grumble at the long grind to the rocks. But most of these men have come direct to rock climbing by chance and not after a course of graduation such as we have indicated. It is rare indeed for the fell walker to lose his love of the hills as hills, to judge a mountain by the quality and quantity of its crags.

The wise man will bear in mind that mountaineering is a very wide term, covering many forms of exercise in upward and downward progress. Rock climbing is the supreme form of British mountaineering, but if you know nothing of map and compass work, of planning a long traverse of peaks, you are open to the dreadful accusation of "Gymnast."

WALKING.

Rambling can be practised at odd times, at week-ends, and on holiday, solo, or in company; and all the year round. The first essential is to be able to walk.

Everybody knows how to walk, of course, yet the tale of blisters, sore feet, premature fatigue and even complete collapse on mild expeditions is a long one. Let us begin with fundamentals. The art of walking on rough ground needs to be cultivated. It is not instinctive, except to country dwellers, and the city man must learn to use his legs properly. The best way is not very stylish. It is almost a cross between the nautical roll and the Red Indian's soft tread. The leg is swung from the hip and knee-bending avoided as far as is consistent with poise and a safe footing. The body sways slightly against the stride but the arms do no work at all unless rapid movement is necessary. The foot is planted firmly though lightly, with the whole width of the boot in contact with the ground. On fairly level ground the track of the two feet should form nearly a single line, i.e., be one behind the other and each one point straight ahead. This gives the maximum comfortable stride. Going uphill the stride is shortened to avoid excessive knee-bending. If the angle is steep a zig-zag line will permit the swing to be maintained and the foot to be properly planted. Some people find that the hands placed on the hip give support. Others put their hands behind them. Do not allow yourself to bunch up in a crouching position. It restricts the breathing and throws a heavy strain on the calf muscles. Digging the toes in and rising on them is very exhausting, though short ascents may be taken quickly in this way. The correct pace is that which enables you to breathe without distress and to keep going uniformly. Bursts of speed with numerous halts are bad climbing.

Going downhill the stride is very different, except on a long easy descent when it is merely lengthened. For steep slopes the easiest way is to run, keeping the body erect and the feet close together, well under the body. The general effect is a sort of bounding canter. If the stride is long and one foot slips the whole balance is lost because the other foot is too far away to do any good. On very steep slopes a zig-zag line can be used and a faster descent made than if a direct one were taken.

It is often necessary or convenient to contour round a hill side, i.e., to walk across it at a more or less regular level. The long even gait is best for this and the advantage of putting one foot immediately in front of the other will be apparent. The temptation to lean in

to the slope should be withstood. It tends to thrust the feet out of place, whereas an erect position will keep them secure.

Rocky, boulder strewn or scree slopes call for special treatment in descent. Step boldly on boulders, striding from one to another and maintain a smooth movement. Scree seems to be the *bête noir* of many people though it gives a swift and easy descent, providing a proper method is acquired. Again, step boldly, but whereas a light tread is desirable on boulders, scree answers better to a heavy one. Plunge the heels well in and let it carry your weight. Do not try to stop it sliding, rather should you encourage it to move. This applies to small scree only; big stuff can be treated as boulders.

When planning a walk you will have recourse to the map, and during the actual day it will be necessary to settle doubts, especially if you get into mist. The methods of using a map are dealt with in the special section. But quite distinct from the selection of a map route is the art of picking a line over rough ground, whether the visibility is good or bad. Largely this is an art acquired by experience. Certain general principles can however be given from our own experience, and one of the greatest truths in rough walking is that the longest way round is often the shortest way home. Boggy ground slows the pace amazingly; so do bracken or heather slopes with concealed stones. Therefore choose a spur rather than a hollow for an ascent, but if there is a stream of the swift moorland or mountain type and it is not too full, the best route is probably in the bed of the stream. The exposed rock gives good going, and the short falls can be turned or climbed. Much depends on the geology of the ground you are on. The slate formations of the Skiddaw country give firm turf which is delightful stuff. The igneous rocks of Snowdonia give rougher ground with more visible stone. The gritstone moors of the southern Pennines with their steep edges and sodden peat hollows give the heaviest work of all. The peak limestone has few steep slopes except in the narrow dales and the turf is excellent. You must modify your method accordingly.

PLANNING A WALK.

It might seem that anything so methodical as planning is inimical to the essence of wayfaring, which suggests a casual vagabondage. In well-known country you can set

out for a day, a week-end, or even a week, without any clear notion of what you intend to do. But in unknown or unfamiliar ground it is wise to make a programme, if only as a basis from which to divert, or even to scrap as the walk develops. Before setting out, mayhap months before, if a holiday is involved, the map will be studied. Then with a firm notion of the lie of the land, its approaches, villages, hills, rivers, and special characteristics, you can think out routes for each day.

You must decide between a walking tour and walking from a centre. Much depends on the district and your capability for heavy walking. A walking tour means that you will be carrying your kit almost every day. In a very mountainous district the average walker will not want to cover more than 15 map miles per day with full rucksack. So the farms or villages must not be widely spaced. Working from a centre and so carrying nothing heavier than a camera and lunch, longer walks are possible but they must be circuits. Again, the grouping of the mountains may suggest touring. The point can be stated clearly by reference to one or two well-known areas.

The Lake District is an ideal touring country. The mountain groups run out from a central boss like wheel spokes. In almost every valley there is good accommodation. So a rough circle starting at Windermere and swinging across each line of hills from valley to valley, first north, then west, then south, and finally east again, will miss very little. If it is intended to bag some high peaks en route and the day turns out very bad there is always a pass over which you may sneak to your next night's shelter.

North Wales is another story. There the mountains are in five great groups separated by valleys, each with a main road crossing a low pass, as at Ogwen, or climbing up the valley to its head as in Nant Gwynant. Most of the district called Snowdonia can be visited by a good walker from Capel Curig and Beddgelert, two excellent centres.

The Pennines yield their best to a walking tour started near the peak and going north, with diversions to east and west to visit the choice dales on their flanks.

A more sustained interest may be added to a series of walking tours by linking them up in a large scheme. Thus a wandering line from Land's End to John O'Groats has been covered in a few years by one energetic individual. Others have climbed every hill in England and Wales,

above an arbitrary height, say, of 2,500 feet. A search for the highest point in each county and the sources of all the great British rivers would be an interesting programme, and like the others mentioned, leaves a wide choice for each holiday. The county to be visited can be selected to suit the time of the year and any vagrant impulse.

An alternative and exactly opposite scheme has its attractions. This is to visit one district again and again, to become thoroughly familiar with all its features in all weathers and at all seasons. A sense of possessorship and conscious mastery is the reward of devotion.

HOW TO BEGIN.

Some indication of a wayfarer's progress through novitiate has been given. It may be useful to amplify this, though we do not wish to spare him any of the harmless mistakes and joys of discovery.

Most towns in England have a rambling club. Some have many, each with a bent of its own. Membership of one of these will introduce the beginners to more accomplished wayfarers and enable him to achieve quickly a fair knowledge of the immediate countryside. On this foundation he can build as he will, walking alone or with one or two companions.

LEADERSHIP.

An exhaustive study of the art of leadership in mountaineering is given in "Mountain Craft" (see bibliography) and there can be little left unsaid. The humbler forms of rambling are, however, only covered in the general sense and some hints on organising and leading a club walk are here given.

Train times and a hint as to the degree of severity of the walk should be stated beforehand—usually in the club syllabus. The leader should be familiar with the route and a preliminary walk over it will give him useful details of time, suitable places for meals (indoor and outdoor) and chances for diversion in case of bad weather or accident.

On the actual walk, if the party be large, it is wise to appoint a whipper-in who will always remain at the rear. The leader will acquaint himself with the intentions of anyone who proposes to leave the party *en route* and note the actual departure if possible. He should never assume that any stray member knows the way and

should hold himself responsible for every one arriving at meal places, and finally the return railway station or tram route.

In short, the safety and comfort of the party is his prime charge, but it is wise not to allow this fact to become public.

ROCK CLIMBING.

Up to this point we have been concerned with the exercise of the legs only, except in so far as rambling exercises all the bodily functions, but at the beginning scrambling was mentioned as a development or by-product of it.

Some of the routes up British mountains can be done with the hands in pockets. Others call for a use of the hands, as points of contact to maintain balance or as definite points of temporary attachment through which is applied the power of the arms. In Wales, the North Ridge of Tryfan and the Snowdon Horse-shoe ; in the Lake District, Swirrel Edge on Helvellyn and Sharp Edge on Saddleback are examples of scrambling routes which call for no special knowledge of rock climbing. The principles are however the same, whenever rock has to be surmounted, so they are mentioned briefly here.

The art of rock climbing is to avoid unnecessary exertion by using to the full the balance of the body. . . Thus, the legs—the strongest limbs—do most of the work of raising the body, whilst the arms maintain the balance. But rocks are hard facts and their formation does not conform to rules. So occasions arise when the arms have to raise the whole weight or to support it during a traverse. There are other occasions when the body muscles must be used. In fact, on a varied course of rock climbing almost every muscle will be used. It is essential therefore that the climber should be fit, and suppleness is more desirable than great power.

Before suggesting some of the methods of climbing, it will be helpful to define the types of problems, and the vocabulary applied to them.

In the Fell and Rock Club's Guide to Pillar Rock, H. M. Kelly says :—

> "The angle of a glacis is such that it can be walked up ; a slab is steeper ; whilst a wall is nearly vertical and may overhang. The slopes are approximately—below 30 deg., between 30 deg. and 75 deg., above 75 deg."

There are other terms generally accepted by climbers. A few of the more common ones are stated here :—

Chimney.—An upright or sloping cleft in a wall into which the whole body will go.

Crack.—A smaller cleft into which a limb will go.

Mantelshelf.—A narrow ledge resembling its domestic prototype in having a wall above it. There is also one below. From the preceding stance the mantelshelf is usually at face or chest level.

Arete.—A narrow ridge, often rising, which it is possible to bestride.

Pitch.—The climbing between two resting places.

Chockstone.—A piece of rock (of any size) jammed in a chimney.

Belay.—A knob or spike round which the rope is twisted to safeguard one man whilst another climbs.

The ascent of a rock face by a gully route resolves itself into a series of pitches formed by jammed boulders. Sometimes the obstacle itself is attacked, sometimes one of the gully walls. Occasionally there is a cave under the boulder and a through route behind it may be available.

A buttress ascent becomes a matter of passing upwards from ledge to ledge and a great variety of problems will present themselves.

Personal height, reach and strength govern individual style ; every climber has his own pet methods. Therefore we do not dogmatise, but rather make one or two suggestions for dealing with these problems.

Footholds may be of any size and shape. The proper use of them will save much floundering. The nailed boot or the rubber shoe should be applied so that the greatest possible area of sole is in contact with the rock. That is to say, on a sloping foothold the ankle should be flexed to make the sole lie parallel to the hold.

On very narrow footholds the nailed boot should be turned to allow the side nails to grip. If rubber shoes are worn the toe can often be used with advantage.

Handholds may be horizontal or vertical ; flat, sloping, incut or undercut. Horizontally they may be used for direct pulling up ; vertically for a steadying sidehold, whilst a step is made up or down. Fingerholds are very useful where balance is precarious. A mere wrinkle of the

rock surface is sufficient if the body leans away from it to make use of the weight in keeping the fingers in position.

Chimneys are climbed by striding them if there are ledges, or by placing the back and hands against one wall and the feet (or knees) against the other. The body and the feet are raised alternately by downward and outward pressure.

Cracks are climbed by wedging an arm and a leg alternately. First the hand and arm are jammed in and the body and legs are raised. Then the leg is jammed and the body straightened. Much assistance may be obtained from the adjacent wall by using any slight roughness for friction holds.

A crack in a corner is sometimes climbed by pulling away with the hands, gripping one vertical edge and swinging up the feet against the opposing wall. The hands move up in turn and the feet "walk up" the wall at a convenient relative level. This is called a layback. Mantelshelves are climbed by "muscling up" on the hands until a knee or a foot can be placed on the shelf. A steadying hold for one hand is found and then the other leg can be raised. The methods of descent are the reverse of those described. Wherever possible the climber faces outward.

The rope is used to safeguard a party wherever the exposure and difficulty make it necessary. Practically this covers all rock climbing except the easy scrambling mentioned earlier. A roped party move one at a time. First the leader climbs till he reaches a resting place, with a belay if possible. He then takes up a firm stance and passes the rope attached to his waist round the belay, thus guarding against contingencies. If the ledge is big, he will not need this. The rope is drawn in until he can just feel his second man. Whilst No. 2 climbs, No. 1 maintains the rope fairly taut without actually pulling. He takes it in under one shoulder, across his back, over the other shoulder and down his front. See illustration "A Gritstone Climb." In case of a slip by No. 2 the weight comes, not on the hands, but on the whole body and legs.

When No. 2 is up, No. 3 may be brought up if there is room for him. If not, he must wait till the leader has climbed the second pitch, and meanwhile No. 2 takes over the belay and watches the leader's rope.

Photo by D. T. Berwick.

A GRITSTONE CLIMB (showing use of the rope).

In descent the order is reversed and the leader comes down last. On difficult pitches he may hitch the rope over a knob so that it runs from him to the knob and down to No. 2 who then pays it out as the leader climbs down. On traverses such hitches are often used to lessen the swing of the end man if he should "come off."

There are several ways of tying the rope round the body. The usual knots for the end man are the bowline and the fisherman's bend. Both are good. Middlemen used the middleman's knot, or the double overhand, but this latter is troublesome to untie and in an emergency may be a real danger. Copious illustrations are given in climbing literature.

Rock climbing is practised on most British crags. Some of the popular grounds are listed here.

North Wales.

Carnedd Dafydd, Carnedd Llewellyn, Glyder Fawr, Glyder Fach, Tryfan, Snowdon, Cader Idris.

Lake District.

Pillar Rock, Great Gable, Scawfell, Doe Crag, Bowfell, Gimmer Crag, Pavey Ark.

Scotland.

The Coolin (Skye), Ben Nevis, Bidean nan Bian, Buchaille Etive, Ben Narnain, Ben Arthur.

The climbs are recorded very exhaustively but in a scattered way, so that much research is necessary for details. But the easier climbs are well known and the beginner can quickly get information about them from the older climbers' guides.

There is excellent short climbing at several places in the Southern Pennines on gritstone. Owing to the close attention paid to these low crags by experts the standard is very high. There are two books on gritstone climbing which are admirably detailed.

CONTINGENCIES.

Wayfaring in mountain country has many possibilities of adventure or mischance. The weather is the greatest factor. A day's ramble may be planned with great care, but a change of weather will upset it unless you are prepared for the contingencies of a day on the hills.

Mist seems to be the chief trouble and most guide books take no risks. They tell you that mountains must be avoided when there is mist about. This is, of course,

nonsense. With map and compass mist can be negotiated. But do not get up mountains even on the fairest of days without these two.

Don't follow a water course down unless you know it is not going to lead you into difficult crags.

Don't be in a hurry to get off the mountain, and don't jump to conclusions.

WIND bothers some folk. Even strong walkers suffer in continuously heavy wind. It cannot be avoided altogether, but a little common sense will reduce its effects. On open hill sides or level tops, look out for stone walls or slight folds in the ground. Both will take the edge off the wind. On ridges, go a few yards down the lee side. If this is not practicable, go down the windward side until you find the patch of comparative calm which is always there.

SNOW AND ICE do not often present themselves as a danger to the walker, and the rising mountaineer will be beyond our advice by the time he tackles snow gullies as a winter climbing problem. But the wanderer on ridges at Easter may come across cornices. These should be treated with respect. Take care you do not break through. The best way to avoid doing this is not to tread on them ! They are formed on the leeward side of a ridge or the edge of a crag. Most of our snow storms come from the south and west. The cornices are therefore found in spring on the north and east sides.

FALLING STONES.—These can only be avoided by agility when seen in time. It is better to avoid the lower parts of a scree slope when other people are performing above. If you go up or down scree in a party, move diagonally so as not to have anyone below another. Don't deliberately throw stones down a hillside and particularly over crags.

CLOTHES AND EQUIPMENT.—Opinions vary more about these than any other wayfaring topic. We therefore merely offer suggestions about the essential properties of each item to guide the beginner. He will quickly develop his own ideas.

CLOTHES.—The hat should be shower proof. We have never seen a storm proof hat, except a Sou'wester. It must stay on in heavy wind and protect the face and head against excessive sun. It should fold to pocket capacity.

Jacket and breeches should be wind proof and hard wearing, with plenty of pockets, all buttoned. Double seats and knees are advisable if heavy work is intended. The knees should be slack like "plus fours" but not too baggy. Riding breeches constrict the knee action and are abominable when wet. "Slacks" are preferred for walking by some men. "Shorts" are delightful for general rambling but the knees need protection on rough mountains.

Stockings should be of heavy wool. A pair of socks, either under or over them reduces friction on the foot.

Heavy shoes can be worn for path walking but rough ground makes boots a necessity. These must be of strong but supple leather with soles thick enough to take the nails. The sole should be of one piece from toe to heel, and the heel low and broad. For average walking ordinary round hobnails are sufficient, say one row all round the outer edge, and two inner rows down the centre. For heavier mountain walking and rock climbing alpine edge nails (clinkers) are required. Do not set them too closely. It only adds weight and they do not grip so well. One inch from nail to nail is about right. Tricounis are becoming popular, either in place of edge nails or, in conjunction with them, as centre nails. A fair weight for a fully nailed pair of climbing boots is 5½ lb. for a man and 4 to 4½ lb. for a woman.

For bad weather a short gaberdine coat will be found useful. Long ones are a nuisance and do not keep the legs dry. Rubber causes condensation on the inside.

A light woolly is warm and comforting at halts and as a change if the jacket be wet.

A woollen cap (Balaclava) is good for very cold days on the tops.

A sound general principle for all clothing is that it should be light in weight and close in texture. Two light garments are warmer than one heavy one. Further, this method makes allowance for the varying conditions of a walking or climbing day.

EQUIPMENT.

Rucksack.—Leather slings and buckles add weight and are not much more durable than webbing. The sack should be strong in texture, but not of heavy canvas. They are rarely waterproof, but an oilskin bag inside will keep the contents dry. An outer pocket or two is useful. If the sack is intended to be used for walking tours, camping

or mountaineering, 22 in. × 20 in. is a useful size. Two deep outer pockets at the sides will hold the boots or other bulky articles.

A big rucksack half full is more comfortable than a smaller one tightly packed.

Rope.—Beale's Alpine Club Rope (three red strands woven in) or Edinburgh Roperie and Sailcloth Co.'s lighter one (green centre thread).

One hundred feet is sufficient for a party of three on most climbs.

Compass.—A floating dial, luminous at night, gunmetal case. Prismatics are not worth the extra weight.

Knife.—A strong clasp knife. Corkscrews and other gadgets to suit personal necessities.

Matchbox.—A waterproof match container will be a boon on wet days.

Sandwich Cases.—Light collapsible boxes or alternatively a serviette. Small linen bags are useful for holding raisins or other fruit.

Gloves.—These are warmer if loose fitting, with one compartment for the fingers. For rock climbing, old leather gloves with the finger ends cut off preserve some warmth, protect the skin, and allow the full use of the fingers.

Rubber Shoes.—Much walking is now done in these on dry days. For rock climbing they should be close fitting and with no welt. They are delightful on dry rock but useless on wet. There has been much controversy about their use. Compare opinions in the various journals.

First Aid Kit.—See special section.

Maps.—See special section.

When preparing a kit for any expedition, be very drastic. The tendency to put in articles "just in case they are needed" must be resisted firmly. For a first trip, the novice may obtain advice. Failing that he must use his imagination. Afterwards when personal experience has been acquired, make every article prove its need and discard everything that can be left behind without serious discomfort and especially anything for which a substitute can be improvised. Remember that every piece of clothing and equipment is a compromise between strength and weight. Be sure that your kit will do the job, but don't carry unnecessary ounces.

Some years ago two Alpine climbers worked out a practicable kit which came to 6 lb. for each man for a 12 hour expedition from a hut. It is not possible for us all to work to such fine limits because of the expense of such things as silk shirts and camel hair gloves, but on the other hand crampons and glacier lanterns are not needed on the British hills. One item on their list gives a valuable tip. This is "Common Property." In their case it included telescope, rope and cooking stove. The principle can be applied to cameras, maps, guide books, and it has been applied to razors; one safety being carried, with a spare blade for each man!

The great principle is to throw out everything which is not necessary for reasonable comfort. Stewart White, in "The Forest," Chapter II, has the truth of the matter and much wisdom.

BIBLIOGRAPHY.

"Mountaineering Art"	H. Raeburn, 1920. 16s.
"Mountain Craft"	G. W. Young, 1920. 25s.
"Mountaineering" Badminton Library.	C. T. Dent, 1892.
"British Mountaineering"	C. E. Benson.
"The Mountains of Snowdonia"	Carr & Lister, 1924. 25s.
"Moors, Crags and Caves of the High Peak."	E. A. Baker.
"The Heart of Lakeland"	L. J. Oppenheim, 1908.
"Mountaineering"	Claude Wilson, 1893.
"First Steps in Climbing"	G. D. Abraham, 1923. 5s.
"The Complete Mountaineer" ..	A. P. Abraham.
"Rock Climbing in North Wales."	A. P. Abraham.
"Rock Climbing in the English Lake District."	O. G. Jones.
"British Mountain Climbs"	G. W. Abraham.
"Some Gritstone Climbs"	John Laycock, 1913.
"Recent Developments on Gritstone."	F. Graham & others, 1925. 4s. 6d.
"Climbing in the British Isles."	Haskett Smith, 1894.
"The Highlands with Rope and Rucksack."	E. A. Baker, 1923. 12s. 6d.

Journals and Publications of :—

Rucksack Club	Journal.
Fell and Rock Climbing Club...	Journal and Guides.*

*These cover all the rock climbs in the Lake District in exact detail and are published in sections.

Yorkshire Ramblers' Club	Journal.
Climbers' Club	Bulletins and Guides.†
Pinnacle Club (Ladies)	
Ramblers' Federations (London and Manchester).	Annual Handbooks.

†Two guides are available, viz., Ogwen district and Snowdon district. These cover practically all the rock climbs.

THE WAY.

" Before the Roman came to Rye or out to Severn strode
" The rolling English drunkard made the rolling English road."
G. K. CHESTERTON.

WITHOUT accepting Mr. Chesterton's version literally, we can concede to it the basis of fact. There are tracks in use to-day which have carried traffic for not less than 4,000 years, and may be longer. Man has always been a traveller from necessity. It is the variation of that necessity which has made the changes in the character of the Way. An historical survey of roads is a history of man, so to understand the evolution of the way in Britain, we must refer to the history of the land and its people.

In the old Stone Age (Palæolithic) man was first a nomadic hunter. He travelled in search of food and clothing. His weapons were flint, so he made tracks from his hunting grounds to places where the flints were found. Primitive workshops have been discovered where he made his axe heads and arrow tips (Cissbury). From these there were well-beaten ways to his dwelling, to his hunting, and to places of worship. He made tracks from winter lodges to summer quarters. In the New Stone Age (Neolithic) man had become pastoral, and whilst still nomadic his movements were now in search of pasture for his flocks. Tribal intercourse was increasing. Trade, the greatest cause of road making had begun by barter. Warfare, the second great cause had its effect. Camps on hilltops (Mam Tor) needed the linking ways. Agriculture, and with it, more settled dwellings came in the Bronze Age. There followed perhaps 2,000 years of slow progress, and then the coming of the Roman civilisation to Britain. Up to this time there had been no " made " roads. Definite tracks were followed but there was no attempt at laying down stone to make a permanent way, except where marshy ground had to be crossed. Man chose his way to give him easy passage but had not the craft nor the necessity for road construction. So in examination of pre-Roman tracks it will be found that the route taken was governed by the need for safe footing throughout the year and whilst

the way will take advantage of natural features there will be little or no effort at engineering. Man feared danger from wild animals, so he avoided forests. He had to be free from the chance of ambush by hostile tribes, so he avoided ravines. He had to find soil which was not likely to be flooded, and which did not become unsafe in bad weather. All these considerations forced him to take to the highest immediate land and so the ancient way went by the ridges. When a valley must be crossed, the way went straight down one side and up the other, for that valley was full of dangers, forests and swamps. The point of actual crossing was decided by several factors. There must be a good line of descent and ascent, by a spur rather than a hollow. The spur would be dry when the hollow was sodden or actually a stream bed. There must be good crossing of the river at the bottom of the valley, and it must be remembered what made such a crossing. It might be a ford or a ferry, but there must be good landing on either side, on gravel rather than clay.

These are the general characteristics of the ancient way, but there were many variations, due to local conditions and, as time passed, general conditions governing the way changed, so that new routes were followed. The introduction first, of pack animals, and second, of wheeled traffic, made necessary some deviation from the old heroic straight dash up a hill side. The gradients were too severe, and so the zig-zag method was begun. Improvements in weapons with the Bronze Age and the Iron Age brought greater offensive and defensive powers, and the valleys were no longer avoided. Camps began to descend the slopes, and the ways between the camps took new lines, now more than ever dictated by the character of the soil.

It is often assumed that road planning in Britain began with the Roman occupation, but there is evidence of a definite plan about many of the pre-Roman tracks. The local conditions of gradients, ridge and valley imposed themselves upon the makers of the way but some method of maintaining direction must have been used.

Mr. Alfred Watkins, in his "Early British Trackways" and "The Old Straight Way," puts forward a theory which calls for investigation. From observations in Herefordshire he argues that early British ways were laid down in straight lines on a sighting system which

used mountain peaks and hills for the main points. (The Romans used similar methods.) Secondary sighting points were on lower levels and usually artificial earth mounds (barrows, tumuli, etc.) cuttings on a hillside to form a notch in profile, and ponds. All sighting points became objects of veneration and so the site was later occupied by the church, particularly at the crossing of two ways. The sighting or "ley" can be traced on the map or in the field. A line that passes through one or two old churches, moated farms, crosses or tumuli will probably yield evidence of ancient usage in stone paving on marshy ground, sunken lanes, etc. Mr. Watkins backs up his argument with the recurrence of the suffix "ley" in place names, the common interpretation of which—"meadow"—is not always appropriate.

There is plenty of room for research on the basis of this and other theories. Very little is known definitely of our pre-Roman tracks and the observant wayfarer will find fascinating problems awaiting solution. A track passing a barrow and going on to a camp site along a ridge-way was probably the way by which a dead chieftain was carried to his burial place. Such a one is that which goes by Mam Tor (Derbyshire) along Rushup Edge to Lord's Seat.

Often enough the ancient way is deeply trenched, but sometimes the clues are faint and it should be remembered that except where the nature of the ground confines the route to narrow limits as on a ridge, one of the chief characteristics is a multiplicity of tracks. This occurs again and again where the way leads down hill. Another helpful clue is the difference of the grass on the track from the surrounding turf. Daisies frequently grow thickly where the old way runs and remain scarce elsewhere.

These are observed signs and should be used to test theory built up on a study of the habits of the ancient inhabitants, always bearing in mind the great causes of the way—Trade, War and Religion. To summarise, there are three general types of pre-Roman tracks :—

(1) Ridgeways.—These will not be found in true mountainous country, for obvious reasons, or on the millstone grits of the Pennines, where the summits are usually boggy.

(2) Hillside Roads.—These pick the best soil above the alluvium and cross ridges by saddles,

(3) Hollow or Trenched Ways.—These are not dug out but as the track is now often on hard ground or even bare rock, they have probably been deeply worn through a soft soil down to a more resisting one.

ROMAN ROADS.

The Romans built up an extensive system of fine roads in Britain. They had a higher civilisation than the Britons, and the existing tracks were useless for the new traffic. The roads were laid out on a definite plan and usually followed straight lines from one point to another, disregarding natural features, except in hilly country where the gradients were engineered to suit the traffic of the day. On the famous Blackstone Edge road there is a gradient of 1 in 5. Sighting points were used in marking out the line and it is probable that the straightness of the road was secured by the "odds and evens" method. Soldiers went out in a single line from one given base to another and the uneven file was then aligned by alternate men facing about. No. 1 would signal to No. 2 to come into line between him and No. 3, No. 3 would signal to No. 4; and so on. Then the even numbers signalled to the odd ones and after a few repetitions the line was straightened. The distance between the soldiers varied with the nature of the ground since it was governed by the necessity of each man for a clear view of two other men in one direction.

Many people assume that the military needs of the day were the force which compelled the Romans to build their new roads, but the civil occupation and exploitation of the new province were equally strong motives. The Roman occupation was not merely military. Once an area was conquered, it was put in order and, there is much evidence to show that the conquerors lived in amity with the conquered.

There were three definite types of roads :—

(1) Military (*viæ militares*).—These were the first to be laid down and were based on the strategic plans. They are marked by forts rather than towns.

(2) Boundary Roads (*limites maxim*)—Roman colonial cities and forts had land attached. The local roads formed the boundaries.

(3) Commercial.—Laid down when civil settlement had begun.

In the turbulent North and West only military roads were made, but in the South and East the two other types grew with the civilisation, based on the first system of strategic roads and the older British tracks.

The system is best grasped by taking it in seven groups. First is WATLING STREET, which begins with the three converging roads from the coast to Canterbury and runs through Rochester to London, from whence it goes North West to Towcester, Wroxeter, Chester, Wigan and Carlisle, with branches to Caernarvon and Manchester.

ERMINE STREET goes North from London through Lincoln, York, Durham and Halton on the Wall, and so to Scotland.

The East Anglian area with IKENILD STREET and AKEMAN STREET forms the third group. From London the roads go to Colchester, Caistor, Cambridge and from Chelmsford to Brancaster. Akeman Street runs westward to Cirencester with a branch from Alchester south to Dorchester (Oxford) and north to Towcester.

RIKNILD STREET runs from Worcester to Birmingham, Derby, and then goes north through Doncaster and Castleford to Aldborough on Ermine Street. A branch of it goes from Derby to Buxton and north-east from there by Batham Gate.

The fifth main road runs from London westward to Silchester. Here it splits, one branch going south-west to Salisbury, Dorchester and Exeter, and the other north-west to Wanborough, Gloucester and South Wales, with arms to Bath and Bristol.

The FOSSE WAY follows a straight line from Lincoln through Leicester, Cirencester and Bath, to Axminster, with a branch to Dorchester. For a length of 182 miles no part is more than six miles from a straight line—a wonderful piece of work.

The seventh road was the one which ran by the Great Wall across the country from Wallsend-on-Tyne to Bowness on the Solway Firth.

The structure of the Roman road was in four strata laid in a trench way, usually 15 ft. wide.

Stones of not less than 6 in. cube formed the first layer. On this was laid 9 in. depth of rubble cemented with lime. On top of that went a 6 in. layer of broken bricks and pottery, also cemented and the final layer was formed of large blocks of hard stone. Invariably the material for the road was obtained locally, and where the road was built on rock only the two upper layers were used.

This evidence is of course not always available for the wayfarer; even the top layer may be buried under turf. But there are other clues which may be observed in the field or on the map.

Unlike the earlier encampments the Roman town and fort sites are well-known, and even if the map does not say definitely that a place is of Roman origin, the local names are an excellent guide -burgh, -borough, street, straight, Chester, Caister (a camp, "borrans" in the North) ridge, causeway, dyke, stone or stave, and Cold Harbour, are all of Roman origin.

(This last is curious. There are over 50 examples in England, and in the north Windy Arbour and Caldecot seem to be synonymous. It is supposed to mean a place of refuge and shelter in wild country but there is no conclusive evidence.) In Wales, Sarn, Fforddfawr, Henfordd and Henteol lie on Roman roads.

But care is needed. Roman names have been copied; the misapplied Watling Street is a case in point, and there are several spurious Roman names like "Via Julia" which are of much later origin. Via Gellia, near Matlock, was named after the Gell family of Hopton.

A boundary following the line of a road may mark one of the *limites maxim*, which will link up with a trunk road. The character of the Roman road is good evidence. It runs straight where possible and only a very steep gradient turns it.

The Roman road may be found to coincide with the modern highway or more often to have become a village street, or a lane. In the Pennines it sometimes survives as a footpath over the moors. Only suitability for the changing traffic and convenience of the route kept a road in use. Many of the Roman roads were abandoned with the shift of centres of interest and population.

MEDIÆVAL.

The whole system of roads fell into a bad state after the Roman protection was withdrawn from Britain and the shock of invasions broke down civilisation. However, in Edward the Confessor's reign we read that there were four "King's Ways"—Watling Street, Fosse Way, Icknild Street and Ermine Street. They were called "King's Ways" because the King's peace covered them and any misdemeanour or felony committed thereon had to be tried by the King's officers and not by the local

authorities. No road construction of permanent value seems to have been done for many centuries, and in 1537 it was written of the Yorkshire roads that they were "so foul and deep that no carriage could pass in winter." Packhorse routes--bridle tracks--were used for commerce over high ground in the Middle Ages, and many of the bridges then built are still to be seen. They were humpbacked and narrow with central buttresses, the top of which formed spaces for pedestrians to step into out of the way of a pack horse, and low parapets so that the pack swung clear. Some of the present roads over the Pennines follow the old pack roads. Where the old road is still visible, it can be followed as a narrow, rough track, sometimes paved on soft ground, sometimes using a bridge, sometimes a ford. Occasionally it coincides with the earlier Roman road. Pack horses were used in Devon as late as 1850.

Trade roads, such as keg ways, bullock ways, rush ways, lead ways, belong to the mediæval era, and some of these names persist. There are also a few "corpse ways" which were the result of churches being few, and the necessity of conveying a body from remote hamlets. A curious superstition still lingers that the passage of a corpse establishes a right of way, directly traceable to those dark ages.

From the Norman Conquest until the sixteenth century there was no legal liability to repair, but in Henry VIII time Acts were passed, including the General Highway Act of 1555, which laid down the liabilities of road maintenance. Until then the roads had been repaired by monasteries and guilds and also by bequests. There was a tax (bryge bot) but it was easily evaded. The existing roads were narrowed by filching of the road sides. Landowners moved the walls or hedges and some roads were reduced from broad highways to narrow tracks. The road system languished until the Parliament of Charles II established the Turnpikes. The name is derived from the turnstile or gate where tolls were paid. Trusts were formed and the gates were hired out to individuals who maintained a section of the road in return for the revenue. The turnpikes were well made but they did not follow the best routes. Local authorities squabbled and landowners plotted to get the road taken over their land. In the eighteenth century the system grew and so did the tolls. There was much scandal and in 1760 riots occurred. In 1756 General Wade

constructed the "military" road from Newcastle to Carlisle, following the Roman Wall for 30 miles and using material from it for road construction.

The beginning of the nineteenth century marks another epoch in the history of the way, for this was the day of Telford and Macadam who changed road building methods so thoroughly. By 1829 there were 20,000 miles of turnpikes in Britain, and hereabouts the zenith was reached. Stephenson and the other railway pioneers turned public attention and money to the new locomotion, and the roads were deserted. This broke down the tollbars, and by 1870 most of the gates had been abolished, but it was not for another 20 years that the roads became entirely free. During the turnpike period there was much tollbar dodging, particularly by sheep and cattle drovers. These men revived ancient ways, or invented new ones over rough ground to avoid paying the heavy tolls. Some of these drover's ways went over very high land as in the case of the one over the Kinder Plateau which was crossed from the Ashop to Edale valley to dodge the Ashopton tollbar.

The twentieth century has begun another road revival. Eighty years have seen the wheel come full circle; the coming of the petrol driven car has filled the roads as never before and we are at the fifth great epoch of British roads. The stages can be stated thus :—

1. Roman roads supersede ancient tracks.
2. Decline of Roman roads. (Fifth to tenth centuries).
3. Mediæval system grows. (Eleventh to seventeenth centuries).
4. Turnpike system begins. (Eighteenth century).
5. Modern arterial roads (Twentieth century).

THE MODERN WAY.

The Ministry of Transport has classified and numbered British roads on a new plan under the Act of 1919. The country is divided into Zones, England and Wales being covered by Nos. 1 to 6 and Scotland Nos. 7 to 9. Each Zone derives its number from the trunk road forming one of its boundaries, so that when standing on Road No 6, facing away from London, Zone 6 lies on the right hand. The first six trunk roads radiate from London, the others

from Edinburgh. First class roads are distinguished by prefix letter A. Hence the trunks roads become A1, A2, etc. The nine roads are these :—

A1 London—Edinburgh.
A2 „ —Dover.
A3 „ —Portsmouth.
A4 „ —Bath.
A5 „ —Holyhead.
A6 „ —Carlisle.
A7 Edinburgh—Carlisle.
A8 „ —Glasgow—Gourock.
A9 „ —Perth—Inverness.

Zone 1 is therefore the area between A1 and A2, i.e., bounded by the East Coast from Edinburgh to Dover on the one side ; and the Dover road to London ; and the great north road from London through York to Edinburgh on the other. Similarly, Zone 5 is bounded by Roads A5 and A6.

Every other first or second class road bears the number of the Zone in which it starts, with its own distinguishing serial number added, second class roads having the prefix B. Third and fourth class roads are not numbered. A road commencing in Zone 1 will continue to bear the same number, though it may run through Zones 6 and 5. Thus, in Lancashire the road from Warrington through Wigan to Preston is numbered A49 because it started in Zone 4.

The advantage of this to the traveller is obvious. The numbers are shown on direction-posts, so once he has selected his road and found its number, he can follow it without further reference to the map *en route*. Motorists and cyclists do not need to stop at cross roads to search the map. The sign post is marked A49 ; that is the road wanted. The road numbers are given in lists which can be purchased from H. M. Stationery Offices and agents, and they are also shown on the new Ministry of Transport ½ in. maps. (See section on maps). The list for all Zones (9d.) gives in serial order the numbers of all routes originating in each Zone, so a tourist can obtain a complete list of all first and second class roads in Great Britain and be able to work out any route he requires.

There is one other point to be noted. In numbering second class roads the numbers B1 to B99 inclusive have been omitted.

Outside the scope of this scheme are third and fourth class roads, winding country lanes, farm roads, footpaths,

bridle paths, and mountain or moorland tracks. These can only be traced and followed by the map. The wayfarer can travel by motor car or cycle on the numbered roads, and may even penetrate into the next two or three grades. When he wishes to leave all paved surfaces behind, then he must prepare to walk.

BIBLIOGRAPHY.

"The Road"	Hilaire Belloc, 1923. 15s.
"The Old Road"	Ibid, 1910.
"Highways and Byways of England."	T. W. Wilkinson. 1913.
"Victoria History of Derbyshire" (and other Counties).	1907.
"Roman Roads in Britain"	Thos. Codrington.
"Our Roman Highways"	Forbes & Burmester.
"Roman Britain"	Connington.
"Romanization of Britain"	Haverfield.
"Handbook of Roman Wall"	J. C. Bruce.
"Romans in Britain"	B. C. A. Windle.
"Prehistoric Roads." Vol. 17, Arch. Cambrensis.	Harold Peake.
"The Old Roads of England." Edinburgh Review.	H. J. Randell.
"The Old Straight Track"	A. Watkins, 1925. 18s.
"The Story of the Roads"	C. H. Hartmann, 1927.
"The Ley Hunters Manual"	A. Watkins. 2s.

THE CAR AS AN AID TO WAYFARING.

"DIEHARD" wayfarers may have held off from motoring as long as they could in fear that they might fall victims—first, of a smash, and latterly, of the allurements of swift travel. To many of us the car on the road was something out of another world than ours. It was an extension of the city and its attendant curses and worries. To set out with the intention of reducing life for one day to a simple business of keeping warm and dry and fed in the open country and then to burden oneself at the beginning with a thing of mechanism capable of bearing all the apparatus of elaborate picnics seemed inconsistent and a deviation from the path of stern rectitude.

But this new universal motoring, now no longer a chance affair of a thousand complicated troubles, refuses to be ignored. The car is being used freely as an aid to the other forms of wayfaring and as a wayfaring vehicle itself. And this, let us confess it frankly, is as it should be, for the car can extend the possibilities of every form of wayfaring, and it has a peculiar advantage over other methods of transport to the objective, since it permits wayfaring to begin with the departure from home instead of the outer railway station or 'bus terminus.

The chief difficulty is to keep the car under control. It may behave itself mechanically and yet be out of control. In fact the absence of trouble is one of the most insidious of its devices to lure its owner into regarding motoring as an end instead of a means. A journey in a car should be more than a matter of being conveyed smoothly through miles of beautiful country. The wise motorist inhales nature lore, geology, village and church architecture, and weather lore, with the fresh air and (to reassure anyone who is about to drop this book with the scornful "Highbrow!") as painlessly, once the start has been made on sound lines.

First principles are the planning of every run just as the walker plans *his* days out. Maps and guides are essential, and no one need lack these. Rather is the difficulty one of choice in a vast selection. We discuss most of the points in the chapter on maps but we want to

remark on one specially here. What with A.A. and R.A.C. patrols and the excellent signposting of the modern highway a motorist may never need to con his map all day, and may even be so misguided as to congratulate himself on an easy trip. Thus does civilization atrophy the ancient powers of man. The map should be studied deeply beforehand for route planning and referred to regularly during the day. In planning, a wary eye must be looking for diversions from the direct line to search out old churches, halls and castles, bridges and the like. These diversions and halts can be better spotted if there is a map reading passenger. The development of dual control and combination of two brains can be a surprising joy.

Planning will, of course, include meals. Some thought can be well spent on this business. There are hotels, there are inns, there are refreshment houses, and never do they by their designation tell the wayfarer what he wants to know. This is the sort of knowledge which circulates amongst people and is not to be found in books. No guide can tell you of the atmosphere, warn you that this " Inn " is a fraud taking an honourable name in vain, or that this " Hotel " is a real Inn and kept by an Innkeeper of the Elect. Surely on a wayfaring nobody wants to tumble into a modern hotel of glitter and noise ? So go carefully and listen to men who have been before you.

Better, of course, is a picnic, but this must be well chosen or it will be a curse. How many times have we seen a car halted on the main road and the party munching sandwiches on the bank, getting the benefit of dust and noise and diversion, no doubt ? We have seen them feeding under a railway viaduct when another mile ahead was a noble river with plenty of space for lounging and feeding. Often on damp days it is not advisable to get out of the car so some preparations should be made for having the meal in the car with hood and curtains up if necessary. Large thermos flasks should be taken or a " primus " or " meta " stove can be used safely in a biscuit tin.

The season of the year should be considered when planning days out. In the spring the blue bells carpet the woods, in the autumn bracken flames in the woods and on the moors. August gives heather bloom on moorland, fruits in orchards and blackberries on hedges. There are tit-bits for most months if the right places be visited.

All this has been written with car wayfaring in mind. There is another aspect to be considered. Many of the choicest spots of scenery are inaccessible for the car, and almost so for the walker unaided, because of the distance from railways. The car owner who knows how to walk over rough country can explore all these places with greater ease. He can use the car to the end of possible roads and garage it in a farm, taking to his nailed boots for the real rough stuff.

The mountaineer can combine the comforts (and often lower prices) of the larger villages with the convenience of the more remote hotels. His scope is extended, because he can cover five or ten miles of road in his car in a few minutes instead of plodding for an hour or so before starting to climb.

The photographer joins in with this great scope and can use a larger and heavier camera for much of his work. Also he has a new and personal foreground object when he needs one !

Campers can do themselves proud with a car to carry kit. Many hitherto-sternly-resisted luxuries can now be added when ounces do not count so seriously.

To come to our main point, it is that a car can be used to extend the range of all other wayfaring and in itself motoring can be an entirely delightful wayfaring, now no longer the distinction of the monied, but part of everybody's life. Car owners should look to it that in their pre-occupation with matters of mechanics and traffic, they do not miss the world through which they are travelling.

A general scheme such as we suggested for walking, adds interest and continuity to the days, week-ends and holidays. A car would of course be of great help in carrying out any of the peak bagging or other walking programmes. In addition it can be used for different ones.

There are many excellent road passes to be visited. The Pennines have Rushup Edge, the Snake, Fiddlers Green, Standedge, Blackstone Edge (all within a few miles of big towns but all giving superb moorland views and altitude) and a long list of others crossing from Lancashire to Yorkshire or Westmorland to Yorkshire and Durham. There are famous passes in Cumberland and Wales. Kirkstone is only too well known, but except in the holiday season, Llanberis and Nant Ffrancon can be lonely enough for anyone.

It is on roads such as these that the structure of the land is seen and the rocky skeleton of England sticks out elbows and knees. There is a chapter in "The Right Place" which talks of this incomparably, and some months ago a journey taken by road from Barnard Castle to Carnforth gave us a vision of the tilt of England. Coal, shales, gritstone, limestone, each layer in turn thrusts up a raw edge to be planed and chiselled by frost, water and air.

How to find these passes ? The A.A. book gives a list of steep hills which are useful pointers and with a map the real passes can be distinguished from the mere freak hills, though these are worth studying, since nothing is without cause. Appendix C gives the road passes of 1,000 ft. and over.

Queer roadside objects can be "collected" either with a sketch book or a camera. They lurk in strange places. At Midhopestones on the way from Penistone to Sheffield, there are two milestones side by side, but differing by a mile in their inscriptions.

Village architecture is a great hare to start. The sketches given later will help the wayfarer to hunt out all the village churches in his district which have a respectable lineage.

There are local customs worth tracing and following, like the Castleton Garland Day and Tissington Well Dressing ; as well as Sheep Dog Trials and local sports like the Grasmere one.

Finally, there are adventures without any pretence of local interest or programme to give them significance—days or nights out just for the fun of seeing the sun set or the moon rise, the rooks in the trees, and the owl. Three days before this was written we had in the course of business to drive for a couple of hours through a fair imitation of a blizzard. There was no chance to do anything but concentrate on a fan of glass clearer than the rest and try to stop the car from leaving the road. For the time all our energies were bent on the matter of self-preservation and we had as much fun as on many a carefully planned day on the high hills. The moral of which is that there is adventure to be had on any road and if it doesn't find you, it's worth while going out once or twice a year to look for it.

CAMPING FOR THE WAYFARER.

". . . And evening came.
With happy sigh he slept—the stars o'erhead."
ANON.

THERE comes a time in wayfaring when even the walls of the little cottage in a sequestered valley where we sleep seem to cut us off each evening from the world of nature.

We long to live and eat and sleep all day and all night in more intimate contact with mother nature.

To go inside even the humblest dwelling as darkness comes on, means missing something of the endless and ever-changing pageantry of the sky, the scents of the night wind and the restful babbling of the stream.

When such a mood is on us, the only solution is to camp out.

Once we have got over the first strangeness of the mode of living and learnt again those elemental tasks which our ancestors did by instinct and of necessity—then the sheer joy of camping gets hold of us and we find that the possibilities of wayfaring are wonderfully increased.

Even to those whose minds are less sensitive to such feelings there is the attraction of an unconventional life where the artificial ruling of the clock disappears. To a mind and body weary with the noise and hurry of civilisation the peace of camp life makes its appeal.

For the wayfarer to whom stern economy is a necessity, camping provides the cheapest form of holiday.

EQUIPMENT.

Tents.

There is no ideal tent suitable for all purposes as conditions and tastes differ so widely.

For a standing camp, where at least a week is to be spent in one place, the tent can be a roomy one, as weight will be of no great importance.

The Army Bell Tent can be bought second-hand for about £3 to £5 and can be hired for 7s. 6d. per week.

The ridge tent, preferably with a fly sheet, is nearer the ideal as the square floor space provides more accommodation. The fly sheet keeps the tent dry, even

in the wettest weather, besides keeping it cool on a hot day. The tents vary in price according to the size, but a good one for two adults costs from £6 upwards.

For a week-end or a cycling or walking camp, every ounce is of importance. The science of light-weight tent-making has advanced so much in recent years that it is now possible to obtain excellent and reliable light tents. Although made of light-weight fabric—usually a fine Egyptian cotton—they are remarkably efficient in their durability and water-shedding properties. The price of these tents is also very reasonable—the smallest size being about £2. The usual type is a small edition of the ridge tent with or without a fly sheet, and such a tent made in "Linenette" giving a floor space of 5 ft. by 6 ft., weighs 4 lb. 7 oz. without poles or pegs.

Ground Sheets.

The ground sheet is just as important as the tent. Even on fine nights the ground may be very damp and the ground sheet is the only protection.

The army cape ground sheet is the best and the cheapest one available. Its only disadvantage is its weight. Light-weight sheets in oilskin and "Moormac" are very suitable for tramping camps but are slightly more expensive.

Blankets.

Light fluffy blankets are the warmest weight for weight. Camel's hair is the warmest of all.

Sleeping bags are comfortable but are difficult to air. Ordinary blankets can be made into a sleeping bag by means of a few large safety pins. (Specially large ones nickelled to prevent rust can be obtained). This enables the bag so formed to be opened out in the daytime and the blankets thoroughly aired.

On a very cold night a layer of newspapers between the blankets adds greatly to their warmth.

Whenever possible blankets should be hung out to air on the trees or hedges in the sunshine. Apart from drying the moisture absorbed during the night, the sunshine restores the properties of the wool. To sleep in sun-warmed blankets is a real luxury.

Bed.

A canvas-covered camp bed is possible in a standing camp, but in other types of camp the ground must be the

bed. A layer of bracken or heather under the ground sheet will add much to the comfort of the sleeper, or an old sack filled with straw will act as a mattress.

A carpet of pine needles such as is found in pine woods makes a bed like a spring mattress.

Cooking Outfit.

There are two methods of cooking in camp. The open gipsy fire of wood is beloved by the camper who delights to enter into the whole atmosphere of the real camp. To such a camper, trained perhaps as a boy scout, the lighting of a fire and the building of fireplaces and oven presents no difficulties. For those who would learn, a few hints are given later on.

Many campers, however, prefer to rely on a Primus stove as they find farmers object to their ground being scarred, and fuel is often difficult to obtain.

Moreover, in wet weather, the Primus can be lighted and used with safety inside the tent.

The pocket Primus outfit is ideal for walking or cycling campers.

The Meta solid fuel burning cooker now on sale is also useful to campers.

Excellent aluminium pans with detachable handles, allowing the whole set to nest are now specially made for campers.

The old-fashioned tin kettles of the picnic basket should be avoided, as they soon leak and easily rust.

The frying pan should be of iron or thick aluminium with a folding handle. Tin and thin aluminium ones burn the food.

Brewing tea is an art on which no two campers agree. According to some, tea cannot be properly brewed in aluminium vessels. It is best to take a small enamel tea-pot if space permits. Otherwise, a tea-infuser made of perforated tin or a linen tea-bag will be found a great boon in making tea in a pan.

Small articles needed include a tin-opener, corkscrew and a few spare plates and cooking forks and knives. A few dish cloths and tea towels and dry soap powder are essential.

Personal Kit.

The great object is to lessen weight and bulk without cutting out essential articles. A small towel, tooth-brush and tube of tooth paste, razor, etc., are essential.

A metal or small glass mirror in a cloth case, soap in a celluloid box, and a comb and brush are next on the list. A good glycerine soap will serve as toilet and shaving soap.

A sponge is a godsend in camp as cold water does not easily remove dirt ! It can easily be packed by pushing it into a nickel-plated shaving soap tin. Knife, fork and spoon, plate and mug come under personal kit as each camper usually looks after his own. The knife should be of rustless steel.

Checking and Packing the Kit.

In order to ensure that no essential article is omitted it is useful to make a list of articles required. This is best done by sitting down and quietly thinking over the typical day's programme in camp and the articles which will be required.

Such a list will include :—

Tent, poles, pegs (mallet, if heavy tent), ground sheet, blankets or quilt, towel, soap, sponge, comb, brush, razor, mirror, shaving brush, primus stove, methylated spirit, paraffin, matches, candles, corkscrew, tin-opener, tea-infuser, pans, kettle, fry-pan, mug, plates, knife, fork, spoon, canvas, bucket, bowl, dish cloth, tea-towels and dry soap.

For a standing camp clothes and personal kit should be packed in some package which is waterproof and which will not suffer by standing on damp ground. (Leather suit cases do not fulfil the latter condition). A large roomy rucksack is very suitable even in a standing camp.

For a walking-camping tour, a great deal of care should be taken in selecting the carrying equipment and in arranging the distribution of kit.

The mountaineering rucksack is the best means of carrying kit. The weight is taken by the shoulder straps and the lower part of the back. The webbing slings of the rucksack should be at least two inches wide where they rest on the shoulders—and should be of sufficient thickness to prevent them coiling up into a roll and cutting into the shoulders.

The larger the rucksack is the better. A small one well-filled assumes the shape of a football and presses uncomfortably on the spine, whereas a large rucksack half filled sits easily on the back.

The material should be absolutely waterproof so that all risk of getting one's spare clothes wet is avoided—and the sack can be put down on wet grass without fear. Persons who prespire freely when walking or climbing find their back gets very wet from the pressure of the rucksack and the lack of any ventilation between the back and the rucksack.

This can be overcome by using a Norwegian rucksack fitted with a "Meis"—a tubular steel framework designed to leave an air space between the rucksack and the walker's back. A similar frame is used in Switzerland—made of light cane—and these are now obtainable in England in an improved form for a few shillings—and they can be fitted to any large rucksack.

When packing the rucksack it is best to put at the bottom those things which will not be required until the end of the day. Fill the outside pockets with those things which will certainly be wanted, such as food, maps, compass, etc.

The tent should be rolled up—the pegs wrapped in thick paper or a linen bag inside the tent—and can be strapped on the top of the rucksack or below it. Make everything secure before starting—nothing is more tiring or irritating than to hear a jangling noise, or to feel part of the kit slipping, with every step taken.

CHOOSING A SITE.

The next essential for a successful camp is a good site. The most elaborate equipment is useless if the site is exposed to the full force of rain and wind, and the most waterproof tent is of no avail if the site become flooded.

An almost level piece of ground from which the ground falls away on one or two sides is generally the safest, but beware of attractive looking hollows !

The nature of the grass will often be a guide to the dampness of the ground. Tufts of marshy looking grass always denotes damp soil and a very luxuriant patch of dark green grass in a field often denotes the whereabouts of a damp area which may be flooded after heavy rain.

Shelter from the wind is essential—and in the spring and autumn this protection should be from the north and east. In summer the shelter should be from the west and south west whence come most of the summer rain storms. A wall or hedge will often provide as good a shelter as trees because the most important point is to stop the wind and rain driving under the tents.

In hot weather the shade afforded by a few trees is very welcome, not only to sit under for meals but to provide a cool larder for storing food. It is unwise however, to pitch the tent directly under trees. The drip after rain is annoying. In addition there is always the danger of a falling branch, not only in a gale but in still weather.

The water supply must be taken into account. It is generally unwise to drink stream water below 1,000 ft. in this country, but a stream is very useful for washing up after meals and for personal ablutions.

Unless Primus stoves are to be used the presence of a supply of dead wood is important.

It should be remembered that the best sites are usually invisible from the road.

Not even in the wildest parts of our island can a camp be pitched without permission. There is practically no common land where the camper has a legal right to pitch.

Except in the neighbourhood of towns, however, farmers are usually very kindly disposed towards responsible campers, particularly if it is made clear that no damage will be done and that provisions will be purchased at the farm.

Those wayfarers who have not time to find their own sites are recommended to consult the excellent lists of sites published by the Railway Companies—but they should bear in mind that many of these sites are more suitable for large scout or brigade camps than for a small party of wayfarers.

The Camping Club of Great Britain and Ireland issue to their members a list of several hundred camp sites suitable for small camps situated in all parts of the British Isles and a wayfarer armed with such a list can usually find a site in the district desired. These sites also have a standard rate of payment, usually varying from 3d. to 6d. per night per person.

CAMP COOKERY.

The chief thing to remember is that roasting or baking is difficult in camp—except to the more expert outdoor man.

The novices should concentrate on dishes that can be boiled or fried ; and should guard against the inevitable tendency to have too much tinned food. Fresh food is essential to good health and whenever possible it is best to cook fresh meat or fish and to stew fresh fruit rather

than fall back on the tinned article. It is on a wet day that the latter becomes a heaven-sent gift !

LIGHTING A FIRE.

The best materials with which to light a fire are birch bark, often found lying at foot of the tree or on dead branches (never peel off a living tree), pine twigs, dead twigs from bottom of a hedge (these will be found dry even on a wet day—this is an old gipsy wrinkle).

Bracken, straw and hay are useless—they always end by choking the fire.

The most reliable way of fire lighting is to make two "fire-sticks." Get two dry soft-wood sticks about as thick as the thumb—and slice these upwards with a knife. The aim is to leave the shavings on the stick and to cut as many slices as possible. The final effect is rather like a miniature Christmas tree. These sticks are then stuck into the ground side by side and some thin dry twigs, etc., piled pyramid-like around them. One match held under the fire-sticks is usually sufficient to start a good fire going.

The best woods for camp cooking are ash, oak, sycamore, maple, beech, birch and apple. The softer pines all give good fires, but burn quickly. Poplar, willow, chestnut and elm all burn badly.

Having got the fire going it should be fed with wood until a good bed of hot ashes is obtained. Cooking on a flaming fire results in burnt food.

A fireplace can be made by building the fire between two rows of bricks about six or seven inches apart, so that the pans will just stand across. This trench should be open at each end and should be arranged so that the wind blows along it.

The open picnic fire is most wasteful and difficult to cook on, as it burns the food as well as the cook !

STORING FOOD IN CAMP.

Keep the Flies away and Keep the Food Cool.—These are the two golden rules for campers. Cover up all food when not in use with pieces of butter muslin, and lift it off the ground, away from dogs and squirrels. A good larder can be made by hanging a board or box by string from the branch of a tree in the shade, and using this as a larder shelf. A cover or a large bag of muslin to keep flies off completes the larder.

Meat can be kept in this way, and if the muslin be moistened with vinegar, flies and insects will not go near.

Bread and cheese are best kept in a biscuit tin.

Butter can best be kept by putting it in a mug or tin, and floating this in a bowl of water and covering it over with muslin. This water-trap keeps creeping insects away as well as keeping the butter cool.

Milk can be kept sweet by standing the containing vessel in a stream or in a bucket of water.

Sugar, salt, pepper and dry stuffs are best kept in tins to be safe from damp and from ants, etc.

CLEANLINESS IN CAMP.

The experienced camper can always be told by the tidiness and cleanliness of his camp.

The idea that camp is a place where the ordinary household rules of cleanliness and hygiene have to be abandoned is a delusion of the ignorant tenderfoot. The importance of storing food in the right manner has already been alluded to.

Of equal importance is the proper disposal of refuse. The safest rule is "Burn all you can and bury the rest."

Greasy water should be poured down a specially dug pit having a brushwood lid covered with hay, bracken or heather which is daily burnt and renewed.

Tins should be burnt in the fire before being buried.

A receptacle should be placed near the kitchen for all bits of food and paper, etc.

It is the pride of every real camper to so leave his camp site on departure that no one can tell there has been a camp there. Boy Scouts are being so trained that the writer has on many occasions been unable to find even a scrap of paper on their site. A site on which 170 scoutmasters had camped for the week-end yielded two small pieces of paper as the only evidences of a camp!

These remarks apply equally to roadside picnics. The real wayfarer loves the country too much to defile it with orange peel and ginger beer bottles.

MISCELLANEOUS HINTS FOR CAMPERS.

In wet weather, dig a small trench round the tent—this will effectually prevent it from being flooded.

Don't guy the tent ropes too tight if rain is expected.

If the wind is rising, examine all tent pegs before going to bed. A large stone placed over each corner peg will

often anchor a light-weight tent in a gale. Keep clothes in a rucksack or covered over with a ground sheet—if they touch the inside of a wet tent they will be very damp next morning !

SLEEPING OUT WITHOUT A TENT.

To many campers who read R. L. Stevenson's " Travels with a Donkey " there comes a longing to follow his example and bivouac amid the pines, with no tent or canopy, other than the dome of heaven.

R. L. S. had a sleeping bag of sailcloth, 6 ft. square, lined with fur—and he had a donkey to carry it !

It is, however, quite possible to carry a sleeping bag made from a light-weight camp eiderdown, with an outer cover of light waterproof material.

Suitable eiderdowns are made by the Camp and Sports Co-operators Ltd., and are as warm as two good blankets.

The writer has bivouacked out many a night with such a sleeping bag—with a canopy rigged up over the head from a small lightweight ground sheet.

One cold night the spare ground sheet was slung over two sticks like a lean-to, open towards a camp fire. The fire was kept going during the night and the sloping shelter reflected the heat down on the body of the sleeper. This is of course a dodge well-known to backwoodsmen and explorers.

The weather in England however is seldom settled enough to allow of long expeditions of this sort, but for a week-end, in the midst of a spell of settled summer weather it provides a wonderful experience.

There is a sweet sense of peace in sleeping out under the stars—and a freshness about waking that gives a new joy to life itself.

CYCLE CAMPING.

Cycle camping is on the increase and this is easily understood when one considers how much country can be covered between one's camping sites. It is an ideal method of touring in level or undulating districts when it is desired to explore a large amount of country.

The cycle will of course, prove a useful accessory even when the camp is settled in one place as many a mile of tramping to the village store will be saved. A larger area of country can be explored from the one base camp and

therefore constant moving on and the consequent carrying of kit can be avoided.

Cycle camping has only come into favour since the advent of the lightweight tent for it is essential that weight be kept as low as possible.

Most of the remarks regarding kit for tramp camping apply equally to cycle camping, but particular attention must be given to the method of attaching the baggage to the cycle.

The principle should be to get the weight of the baggage as near the ground as possible. The lower the centre of gravity of the whole outfit the less will be the tendency to skid.

There are a few cycle campers who prefer the rucksack which they carry on their backs, just as if they were pedestrians. In the writer's opinion, based on experiments with all types, this is a tiring as well as an unsafe method.

It is best to distribute the weight between a strong back carrier placed just above the rear mudguard, and a smaller carrier, on which small objects can be strapped, on the handle-bars.

On the back carrier the major portion of the baggage must be placed, and the weight can be secured best and kept very low by the use of pannier bags.

These can be made out of two old army packs, slung one on each side of the carrier. This allows room for a small package actually on the carrier itself. An expanding Japanese basket or valise of canvas is suitable for this purpose.

The pannier bags may also be made out of lighter material such as unbleached calico made waterproof with boiled linseed oil or other waterproofing mixture. These side panniers must be rigidly secured to the side stays of the carrier as well as to the back fork of the cycle.

These receptacles should hold all that the average camper needs and will allow of easy packing.

Mackintosh, ground sheets, etc., can be rolled and strapped to the handlebars.

The tent poles are best strapped to the top frame of the cycle.

It is a good idea to have a clip fixed to the Primus stove, in order that this may be clipped to the cycle frame, away from the other baggage. There is always a danger of leakage of paraffin and the wise camper keeps his stove away from clothes, food and cooking pans.

MOTOR CAMPING.

The motor camper has the advantage that weight is less important. A good ridge tent with jointed poles, plenty of blankets and even a camp bed can be carried with ease in a light car.

The motor camper has most of the advantages of the caravanner without the expense.

For solo camping it is possible where seats are removable to make a very comfortable bedroom in the car itself and thus save the trouble of pitching a tent—but most motor campers prefer to utilise a tent, and this is necessary in the case of a party.

By means of a car some of the wildest valleys in the country are open to the camper, for the problems of food and transport of the camping gear are solved.

CANOE CAMPING.

BOAT CAMPING.

CARAVANNING.

The foregoing remarks apply equally to these forms of camping. For special hints see the camping handbooks.

BIBLIOGRAPHY.

"Camping for All"	E. E. Reynolds. Black.
"Tramp Camping"	Pember, Ernest Benn Ltd. 2s. 6d.
"Camping and Woodcraft"	Horace Kephart, Macmillan Co. 10s. 6d.
"Notes on Camping"	Board of Education. 1s.
"Caravanning Made Easy"	Bertram Hutchings, Simpkin & Co. Ltd. 1s.
Publications of the Camping Club of Great Britain and Ireland (Annual Subscription: 7s. 6d.)	2-3, Greville Street, Hatton Garden, Holborn, E.C.1.

(Handbook of Lightweight Camping and Magazine "Camping" are supplied free to members.)

MAPS.

" It hurts to think of the pleasures that people turn away from their doors. There are some who have not even learnt to read maps."
C. E. MONTAGUE.

IT is a long way back to Babylon at its prime, yet the history of maps goes all that way. There are in the British Museum some tablets, carved in Babylon about 2,000 B.C., giving rough details of a land survey, the earliest known map, and possibly a cadastral one, the forerunner of our modern 25 in. Ordnance Survey Map.

Apart from this one, all the early maps seem to have been charts made by seamen from dead reckoning on the voyages, and whilst the coast lines are surprisingly accurate, land features are not well shown and are inaccurate. There were numerous World Maps, their sequence telling us how human knowledge was being built up as the seamen made longer and wider sweeps of the oceans. They all had trouble with the problem of showing a curved and irregular land surface on a plane.

The first map of Great Britain was probably the one made in 1236 by Matthew, and there is one in the Bodleian, dated 1300, which shows roads, rivers and towns, but no hills. In the sixteenth century several County Maps were printed showing roads, towns, rivers and hills. These are drawn in profile with little relation to the actual configuration. The conical hill figure was used conventionally as were the waves on the sea. Good examples of this type of map are Speed's, which were published in a description of the " Theatre of the Empire of Great Britaine " in 1611. Town plans are given in the corners of the maps, and are measured in paces. The map itself is scaled about 6 miles to one inch, but the mile is the old one of 1,500 Roman paces and not the newer British one of 1,760 yards, authorised in 1593.

These old map makers found difficulty in maintaining the dignity of scientific statement of fact. Constantly their artistic temperaments broke out in remarkable embellishments, especially when they had to deal with a piece of sea. Strange amphibians, monsters, neptunes and mermaids sport, and naval battles are fought round our coasts for Speed. As yet the great difference between map making and picture making is not clear. Scientific

Surveying dates from 1615, when a Dutchman Snell invented the method of triangulation. It is based on the mathematical calculations by which can be found all the properties of a given triangle from the dimensions of the sides. The modern survey is conducted on these lines.

In 1675 came the first road guide to the order of Charles I, Ogilby's "Britannia" containing strip road maps for various coach journeys. These still maintain the old methods of sketching perspectively or in profile the objects by the road. Churches, towns and gibbets appear on it.

In the next century methods of surveying were improved, better instruments were made, and some useful local maps appeared.

It was in 1745, after Culloden, that Lieut.-General Watson serving under the Duke of Cumberland felt the necessity of an accurate map of the Highlands. With William Roy he began, and from this purely military work came the great organisation of the Ordnance Survey.

The work was stopped in 1755 by the war with France in Canada. By this time it had been extended into the Lowlands. Eight years later Roy (now a General) began a General Survey of Great Britain. A base line for the main triangulation was measured on Hounslow Heath, It was over five miles long. In 1791 Capt. Mudge of the Royal Artillery was remeasuring this line. His is one of the great names in the history of surveying. During the first twenty years of the nineteenth century there were many delays, and for a time map publication ceased ; but in 1825 an important change took place. The survey of Ireland began on a scale of six inches to the mile. Up to this time two inches was the scale in the field but the maps were published one inch to the mile. A great base line of nearly eight miles was measured near Lough Foyle by Col. Colby. This larger scale was adopted in 1840 for Great Britain, and the Government ordered a new Survey. The story of the work is very interesting and full of human touches. Once Colby had to dismount the theodolite in a gale which wrecked the camp. Bad weather delayed them repeatedly, and on the return of good visibility there was keen rivalry to sight the first flash of the distant heliostat. There was a regular scale of rewards for the first sight. Up to 10 miles it was 6d, between 10 and 20 miles 1s., and so on. Above 100 miles it was a guinea.

In 1854 an even larger scale was chosen, and this is to-day the basis of all our maps. It is the so called 25 in., actually 25·344 in. to the mile or $\frac{1}{2500}$. It shows all fences, walls, houses, etc., and is used for delimiting property boundaries. Hence the name "cadastral" map (French-Cadastre, a register of survey of property). It is revised every 20 years in urban districts, and every 40 years in rural areas. The one inch is revised independently at 15 year intervals.

The changes which have taken place since 1854 have been in method of reproduction and in details of field work. The general policy has remained much the same. But before leaving the historical notes, some reference should be made to the accuracy of the work. When in 1852 the primary triangulations of Great Britain and Ireland was completed and the Salisbury base referred to the Lough Foyle base 350 miles away, the error in the length of eight miles was less than 5 in.

The surveyors have exhibited remarkable patience and tenacity. In the matter of a fixed sea level figure, they took hourly tide level readings at Dunbar, Newlyn and Felixstowe from 1915 to 1921, and found the old mean sea level at Liverpool to be wrong. The error was 0·13 feet low and subsequent maps have a mean sea level so much higher.

There are now six varieties of 1 in., four $\frac{1}{2}$ in., two $\frac{1}{4}$ in., and two $\frac{1}{10}$ in. maps produced by the Ordnance Survey Office. In addition they have made a very fine map of Roman Britain, geological maps, a $\frac{1}{1000000}$ physical map, and the special road maps for the Ministry of Transport scheme of road numbering (see "The Way"). The $\frac{1}{4}$ in. have also been bound up in atlas form.

From the O.S. maps have been copied, adapted, and reduced many others. Bartholomew's excellent 1 in. series have been preferred to all others by many walkers and his $\frac{1}{2}$ in. has been perhaps the best known cycling map. Then there are road maps galore, Michelin and Dunlop being good examples of trade adaptation for special purposes. Many of these are issued with a guide reference book which gives useful motoring or cycling routes and information about road-side objects. But the methods of production, the signs used, and the reading of them, are the same for all types. There are certain limitations imposed on makers of maps, practical difficulties which have been met by adopting conventions. In the early maps as we have noted, the draughtsmen

took liberties. Perhaps the artistic temperament was not to be stifled, perhaps they were striving to make their maps so clear that no one could fail to interpret what they drew. But wherever perspective or profile sketches were introduced, scale and accuracy were ignored. To overcome the difficulty of representing such things as houses, churches, bridges on maps of small scale, conventional signs are now used. The code is almost universal and the key is usually given on the edge of the map. This point illustrates the divergence of map drawing from art to science. The essence of a map is accuracy and clarity. Everything must be subordinated to that aim. The problem of accurately showing a curved and irregular land surface on a plane has been mentioned. It is on this point that maps show their greatest diversity. The curve of the earth's surface is ignored and the surface drawn as if it had been flattened. This produces a small error but it can be ignored on such maps as wayfarers use. The irregularity of the land must be shown. It is of great importance for the motorist and cyclist to know where the road rises or dips and what the gradient is. Equally must the walker be told where he will have a steep hillside to climb and where he can walk along the crest of a ridge.

The methods of showing the varying heights are these :—

1. Hachuring.
2. Hill shading.
3. Spot heights.
4. Contouring.
5. Hypsometric tints (layering).

In hachuring, fine lines are drawn down the steepest slopes leaving ' high lights " on the tops of hills and ridges. It is a form of shading with an assumed overhead light.

Hill shading is similar but the shading is effected by rough colouring with a brush or stump. The sheet is photographed and a half-tone block produced. Usually overhead lighting is assumed, but occasionally oblique lighting from N.W.

The disadvantages of these two systems are :—

1. There is no uniformity between different sheets. A 250 ft. rise in lowland country may be shaded as heavily as a 1,000 ft. rise in the mountains.
2. The place, names, etc., are often obscured by the shading.
3. It is necessary to add contour lines or spot heights to show actual levels.

The advantage is that the shading gives a vivid notion of the land modelling.

Spot heights explain themselves. They merely show the level at certain points, such as hill summits, cross roads, etc. They are important additions to the other systems.

Contouring is the method which gives scientific accuracy and if done well as in the newest sheets of the O.S. there is a clear portrayal of the modelling. It must be done uniformly, or it is misleading. The old "Coloured Edition" 1 in. gives contours at 100 ft. intervals to 1,000 ft. and above that, changes to 250 ft. intervals, a bad fault. A uniform slope appears to ease off above 1,000 ft. on these maps. The new revised popular edition is contoured at 50 ft. intervals throughout.

Layering by colour is the method we all remember in the physical maps of our atlases. The colours range from light green at sea level to deep brown on the mountain tops. The difficulty is to achieve fine graded tones to represent the various levels, and to avoid sharp contrasts at intermediate heights. The best colour order is adopted from the spectrum, ranging from green through yellow and brown to orange.

The new O.S. tourist maps are fine examples of the combination of contouring and layering. The Cairngorms, The Peak District, The Lake District and Snowdonia have already appeared in this series and are perhaps the highest attainment in British maps.

CHOOSING AND READING A MAP.

The ability to understand and interpret a map is essential to any self-respecting wayfarer. No doubt it is possible for a motorist to follow a given list of towns and villages by signposts, and to arrive at his destination. A cyclist may get along too, and even a walker may, with the aid of guide books and friends manage in a way without ever reading a map. But not one of these will extract the full enjoyment from his wayfaring. They will all miss the keen joy of planning a route in detail and, worse still, they will never be able to spend a lazy hour on a wild night conning battered maps.

These three great divisions of wayfarers need maps of different scales and different notation. The prime feature

of one is negligible detail for the other. So we state here briefly the most useful maps for each.

MOTORING.—The ¼ in. to the mile is the most useful scale. It gives a wide touring area and the detail is sufficient for all identification. The new Ministry of Transport ½ in. maps are specially prepared for use with the numbering system of roads. They do not indicate steep gradients, leaving this information to road signs. Otherwise, they give all details needed by a driver.

CYCLING.—Half-inch O.S. or Bartholomew is a good map. The new O.S. layered edition is better than the coloured edition. The second class roads are clearly shown and the gradients can be judged from the layering.

WALKING.—Nothing less than the 1 in. is any good, except for identifying distant points. A ½ in. may be used for this purpose. Bartholomew and the Ordnance Survey maps are both excellent. The tourist edition O.S. are nearly twice the area of the popular at the same price, but the old edition, recently superseded, of the Lake District, for example, is poorly printed. A walker's map must show field and hill paths clearly, must be well contoured, and must be legible. Remember that the map is needed most when weather conditions are bad.

Generally, choose the higher priced linen mounted map. It wears very much longer than the paper one. A dissected and mounted map has the advantage of not crumpling and obscuring details at the folds but the space between each dissected piece makes accurate measurement impossible. Great accuracy is not often required when using a 1 in. scale, and the rough fell walker will find a dissected map more serviceable ; but on the ¼ in., the total error in a long measurement may be serious.

Skill in reading a map only comes by long practice. It is easier to acquire that skill under fair conditions so it is wise to make use of the map regularly, even when it is not needed, until the eye and brain translate its symbols fluently. When urgent need arises the acquired skill will be there ready to solve the problem.

The first point is to understand the symbols used. This is not difficult, since the key is given on most maps and reference to it is easy. But it is no use unless the map is set correctly and herein lies the main difficulty

for most people. There are three conditions, one of which must be fulfilled before the map can be set. You must know—

1. The North, or
2. your position and one other point on the map visible from your position, or
3. two or more points visible from your position.

1. The north is found by compass, by the sun and a watch, or by the stars. The first method is obvious, and the last will be understood after reference to the section on stars. The second one needs a little explanation. Take your watch and hold it so that the hour hand points to the sun. Imagine a line drawn through the centre of the watch bisecting the angle between the hour hand and 12 o'clock. This line runs north and south. To decide which is north and which south, you need only remember the sun's position approximately, viz.:—6 a.m. east, 9 a.m. south-east, 12 noon south, 3 p.m. south-west, 6 p.m. west, 9 p.m. north-west. Remember to allow for the difference of one hour in summer time.

   If the compass is being used, the map must be adjusted for the magnetic variation. The needle points to the magnetic north which was (in North Wales) in January, 1925, 15 deg. 40 min. west of true north, and this variation decreases annually by an amount which is not constant but was then stated as 10 min. For practical wayfaring this decrease is not important. It is rarely that a map is needed to be set to 1 deg. Fourteen deg. is, however, enough to cause a lot of trouble so this must be allowed.

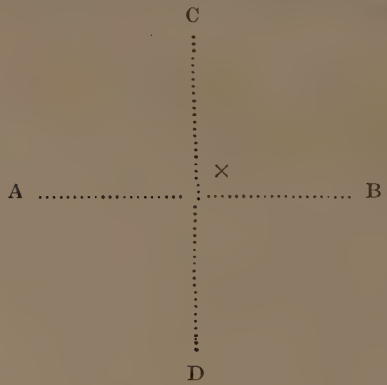
2. Knowing your exact position on the map and with one other known point in view, set the map by sighting along an imaginary line between these two points.

3. Knowing two other points in view, and not your own position, as points A and B in the diagram ; imagine a line intersecting the two. If you are on the ground between them, your own position will be found approximately and north exactly.

Knowing two other points as C. and D, the intersecting line again crossing your position, you must be at point X where the two lines cross.

With the map set, the points of a landscape may be identified in clear weather, or the route over rough mountain country followed in thick mist. The knack of doing this lies in good estimating of distance walked in a given time and of the map distance, and of walking in a chosen direction without swerving under wind pressure or the insidious lure of easier going. Experience only will produce this knack, but a good groundwork to it is the ability to deduce cogent facts from the symbolism of the map.

It is possible to reconnoitre new ground very thoroughly before leaving home. Suppose you are in the Snowdon district and want to have a look at the Carnedd group.



Take a look at the new Snowdon Tourist 1 in. map, one of the best examples of the fine work of the Ordnance Survey. The two Carnedd summits lie north of the Capel Curig—Bethesda road. There is a high and rather intricate formation between Llyn Ogwen and the old Roman road from Aber to Caerhun, but the main ridge goes roughly south-west to north-east, losing height as it goes. A route from Conway to Ogwen along the ridge would touch all the main peaks. What are you likely to find on that route, and would it be better done from Ogwen to Conway? The colour layers show that the highest mass is near to Ogwen, so that a start from there will give you a stiffish climb early in the day, and the

later stages will be down a series of gentler slopes to the coast. Your choice will depend on personal preference and general programme. As a last day of a tour it would be convenient to end at Conway; and the reverse is a fine entrance to Snowdonia. Taken this way, consider the detail. Tal-y-fan is the first peak, but it may be turned on the east by Llangelynin and the Bwlch-y-Ddeufan. The gentle angle of the ridge from Pen Sychnant is the best route to the summit. Note how the contours spread wide as they curl round this ridge, suggesting a broad easy slope. From the 2,000 ft. cairn there is a dip across a track and a short ascent to a point 1,962 ft. The contours are closer on the west but wide enough on the south to show a comfortable route down to the Bwlch where the Roman road crosses the low gap in the ridge at 1,403 ft. To get to Drum is the next problem. The curling of the contours again indicate an ascending ridge, first steep (250 ft. in $\frac{1}{8}$ mile) then easier to the 2,000 ft. line where the ridge line turns to the south. Two ups and downs are shown by the contour circles and then the slope goes upward to the cairn, 2,578 ft. on Drum. From here there is a descent of 150 ft. to a col and a climb of nearly a mile to Foel Frâs (3,091 ft.). The ridge is well defined, on either side the contours are close enough to mean that there is a good slope. Between Foel Frâs and Foel Grach (3,195 ft.) the route will call for care in mist. Notice that there is a widening of the lines, and a subsidiary ridge to Yr Aryg on the west. First comes a descent to 2,900 ft., then a level stretch turning due south and, leading to the west a slight rise of 50 ft., then the ridge rises slowly to 3,195 ft. From here it will be wise to keep well to the west where there is a decided drop to Ffynnon Caseg, to avoid the chance of getting low down on the gentler eastern slope. Some rocks are shown on the climb to Carnedd Llewellyn (3,484 ft.) and they will serve to guide you in the last 300 ft. Observe the square pyramid shape of the peak with obvious routes at the angles. The one to the south leads quickly to a narrow ridge at a level of 3,050 ft., which trends south-west by south to a point where crags are shown on both sides. From here to Carnedd Dafydd (3,426 ft.) there is a big escarpment on the north side and the best route will be close to the top of the rocks, avoiding the slopes on the south. At the summit a choice must be made of a descent. The ridge still goes on to the south-west and south, where there is a final peak of

3,210 ft. The descent to Ogwen from this point will be very steep, 2,000 ft. in $\frac{3}{4}$ mile, which is more than 1 in 2, and at one point 250 ft. in $\frac{1}{16}$ mile or 1 in 1·3. From Carnedd Llewellyn an easier line would be down the slopes to the south-east for a half-mile and then south to the road.

A comparison of the old tourist map with the new one will reveal that there is a boundary line running along the Drum—Foel Frâs portion. This may mean cairns or a fence which will be helpful. It will also show how much better is the new contouring.

The motorist or cyclist planning a route is not concerned with details of this sort. What he wants to know is the shortest road route between two points or the most interesting one according to whether he is concerned with getting there quickly or seeing the country.

In the first case it is simply a matter of using a good $\frac{1}{4}$ in. or $\frac{1}{2}$ in. map, and selecting the main roads, which are shown more strongly coloured than others. In the second case a careful study of the general contours, the run of the rivers and patches of green indicating woods will suggest some variations from the direct line. The special type names marking old crosses, battlefields and camps are of some help, too. Generally speaking, the more picturesque a road, the more winding it will be, and speed must be reduced. Allow for this factor in the day's time schedule. Observe the average rise and fall of the road, so that you can estimate the gradients to be climbed or descended. Some maps state these in figures ; others show it by the contours only. Thus, if a road passes from a height of 200 ft. to 800 ft. in one mile, this means a gradient of 600 in 5,280 or 1 in 8·8. To avoid hesitation at signposts on the run, observe not only the main towns but the lesser villages and particularly the next one following a crossroad or a fork. Sometimes the signposts in remote places mention the next village only.

Some time spent on map reconnaissance of this sort makes a strong impression on the memory so that the day's expedition, whether on foot, cycle or car, is vividly marked out by a string of mental images. The pleasure of the day will be enhanced, you know what you are doing—and why ; and you can modify the plan with surety if weather conditions or personal whim suggest it.

HOW TO FIND THE NORTH WITHOUT A COMPASS.

DAYTIME.

1. By the Sun.

Described above.

2. By Churches.

Parish churches are usually built so that the altar lies at the east end of the church.

3. Trees.

In exposed places trees will be seen to lean over slightly with the prevailing wind. In western England this is south-west and exposed trees point their tops to the north-east.

4. Tree Stumps.

Where a tree has recently been felled, leaving a flat-topped stump, it is often easy to use the backwoodsman's method.

Look for the heart of the trees, i.e., the centre of the rings of growth. These rings will be thickest on the sunny side (south) and a fairly accurate line can usually be obtained.

5. The Moon.

(*a*) **By the full moon.**

When the moon is full it is exactly opposite the sun. The same method of using a watch as given above for the sun is applicable.

(*b*) **When the moon is not full.**

First of all, find the age of the moon. If this is not known and a calendar is not available, estimate as follows :

When the full round side is to the right, it is waxing—when to the left, waning. When cut exactly in half, it is seven days before and after full. Between half and full the age can be judged approximately.

Now use a watch as for the sun—but imagine it put on 50 minutes for every day the moon is after full, and put back 50 minutes for every day the moon is before full.

6. By the Stars.

See section "The Night Sky."

NOTE.—It is often stated that the moss grows on the north side of trees. This is not true to a sufficient degree to serve as a method of finding the north. In woods and coppices moss grows on all sides of trees—and even with isolated trees it is not an absolute rule.

BIBLIOGRAPHY.

"Map Reading"	J. W. Cameron, 1920. 4s. 6d.
"Map Reading"	G. H. C. Dale, 1921. 7s. 6d.
"Geological and Topographical Maps."	A. R. Dwerryhouse, 1911. 4s. 6d.
"Maps and Survey"	A. R. Hinks, 1913. 6s.
"Ordnance Survey Maps of the United Kingdom."	Col. D. A. Johnston. R. E., 1902. 6d.
"The Maps of the Ordnance Survey."	Col. H. T. Crook, C. E., 1892. 1s.
"The Lure of the Map"	W. P. James, 1920.
"The Printed Maps in the Atlases of Great Britain and Ireland."	T. Chubb, 1927.

A Note on the "One-inch" Ordnance Series.

It should be noted that the only series of maps covering the whole of Great Britain on this scale are those published by the Ordnance Survey.

These "one-inch" maps are issued in several forms, of which the "Popular Edition" mounted on linen and folded in covers at half-a-crown a sheet, is a universal favourite. Each normal sheet of this series measures 27 in. by 18 in., covering an area of 486 square miles. Contours are given at 50 ft. intervals; objects of antiquarian interest are indicated in Old English or Roman characters, and each sheet contains a mass of useful information not readily to be obtained elsewhere.

Special maps on the "one-inch" scale are published of all the noted tourist districts. These sheets usually cover an area of 800 square miles, and are obtainable at 3s. each at all the principal booksellers and railway bookstalls.

Members of rambling and cycling clubs should write to the Director General, Ordnance Survey Office, Southampton, for a booklet containing full particulars, index diagrams and coloured specimens of the Ordnance Survey Small Scale Maps, which will be forwarded free on mentioning this Handbook.

ORDNANCE SURVEY MAPS.

One Inch to One Mile; "Popular Edition."

Reproduced by courtesy of Ordnance Survey.

SCENERY.

WAYFARERS are great gazers at scenery. The things that go to make up scenery are those which have the most interest for wayfarers, and, indeed, create wayfarers. It is not strange then that the cause of the shape of the land and the stuff of which it is made should be a matter of interest. Yet, many folk are content to have vague ideas that the hills are the result of pre-historic earth movement and to let it go at that. Probably the name of the science which deals with these matters—geology and the awful names used by geologists keep lots of us from probing further. There are few books on the subject which can be tackled without hard study. There is room for a "Geology without tears." The simplest way of getting some basis of knowledge is to study one's own familiar countryside or a district well known by many holidays spent there. The larger facts can be hung on to numbers of small known pegs and if the significance of the risings and fallings of a few square miles is understood, the rest will follow.

It is easy to follow the motions of strata laid down and then crumpled into hills and valleys.

There are parts of the earth still in this simple or primary landscape form. But not in this ancient land which has been upflung, submerged, planed down, elevated again and then denuded by centuries of aerial, water and ice action. We see now a landscape which has the appearance of permanence and to our human notions of time, it may seem everlasting, for the earliest savage man hunting about the forests which covered most of the country saw a landscape we could recognise to-day. The great changes had ended and only the slow decay which is levelling the hills (and which we can observe if we watch one small area for a half a lifetime) has here and there brought down some rock or cut a channel. The history of the earth changes here can be illustrated best by studying the small groups of hills. Snowdonia, the Pennines, the Lakeland fells, are all the remnants of great mountains, probably 20,000 ft. high, the result of the first crumpling of the strata.

Those undulations were in places very fantastic and the text books give special names to the variations.

There was a period of normal wastage and then a submergence. The sea laid down silt and mud and dead sea creatures and the tidal movements made changes, the general tendency being to lower the peaks and to produce a level sea floor. That floor was then raised and the old mountain ranges were plateaux, much lower than before. The wasting was carried on by rivers, frosts and sea erosion. To this much battered land came the Ice Age and glaciers were formed on the hills. For a time they worked on the surfaces, scratching the rock, carrying boulders, heaping rubble into lateral and terminal moraines, and then they vanished as the climate changed back to the moderate one we know, and left a landscape such as we see to-day.

The main features of the country are these :

There is a general tilt of strata from the north west towards the south east. Thus, the oldest rocks (the lower strata) are exposed in the mountain groups of Wales and Cumberland and Scotland. Lower strata have been subject to greater pressure and are harder. They weather more sharply and give more rugged scenery. Along the south and east coasts the chalks, sandstones and clays are being moulded by the tides. If you crossed England from Dover to Carlisle, keeping as straight a line as possible, you would pass in turn over the edge of the strata, with variations by local doublings back and archings, and you would see most of the stuff of which we know the land to be made, beginning with the youngest bits and ending with the ancient volcanic stuff in Cumberland. The term volcanic is rather a misnomer. It suggests violent eruptions, but most of the fire-produced (igneous) rock in this country came to the surface, only after it was cool, having originally in its molten state pushed up through faults and cracks to form dykes of intrusion.

There were actual volcanoes from which lava flowed and dust was blown over the land to settle in layers and pockets known now as " tuffs." The cone of the volcano being loose, friable material wasted away later, leaving behind the last lot of lava which stuck in its throat, the plug which stopped the crater's mouth. The little Castle Crag in Borrowdale, Arthur's Seat (Edinburgh) and the Wrekin and Clee Hill in Shropshire are examples.

The igneous rocks are variations and intrusions therefore on the general scheme of strata folded, arched, and faulted.

Here is a list of the British formations, their principal sub-divisions and some hints as to their locality and type of scenery.

Recent.....	Muds, Gravels.....	River Beds, Flood Areas.
Glacial	Perched Blocks Striated Rocks.	Mountain Hollows.
Eocene	Clays	London District Outskirts.
Cretaceous ..	Chalks	The Downs, Commons of Surrey.
	Clays, Greensands....	Kent, etc., Cliffs at Dover.
Jurassic	Clays and Limestone..	Purbeck, Portland and Oxford.
Triassic	Sandstones, Marl.....	Devon, Cannock, Sherwood.
Permian	Sandstones	South Devon.
	Limestone (Magnesian)	South Derbyshire and N. Leicestershire.
Carboniferous	Coal Measures	Lancashire, Yorkshire, Northumberland, etc.
	Millstone Grit.....	The Pennines.
	Mountain Limestone..	Peak District, Cheddar.
	Shales	N. Derbyshire.
Devonian ...	Old Red Sandstone...	Moors of Devon and Somerset.
Silurian	Slaty Shales.....	South Shropshire. Welsh Border.
	Volcanic Debris.....	Lake District.
Ordovician ..	Similar but Harder...	Arenig Mountains. S.W. Shropshire Hills.
Cambrian ...	Slates, Grits.....	North Wales, Cumberland.
Pre-Cambrian	Volcanics	Highlands, N. Wales.
	Gneiss, etc.....	Lake District, etc.

This list is simplified. There are actually 56 separate layers comprised in the 13 general divisions mentioned. But for the wayfarer who just wants to know why the Peak District has limestone, gorges and caves, and (on the north and east) heathery moors with rocky escarpments, and why some mountains are sharp and others rounded, there is no need to go into such details. In that delightful district where the Pennine comes to an end, for instance, there the general tilt south eastwards is broken up by a deep basin called a syncline. The top of the crests on either side have been worn down.

That is why Kinder Scout has rocky edges, and on either side the strata are repeated, so that coal is found on both sides of the Pennine. This curious inversion of relief, as it is called, which leaves high land where once was the valley bottom repeated frequently in hill country. It is due to the rocks at the bottom of the curve being more compressed, and therefore harder than the rocks at the top of the anti-clyne. The subsequent denudation was much more effective on the softer material and so we have the strange result that our high hills of to-day were once the bottoms of valleys. Snowdon is in the

curve of a great syncline, the lowest layers of which are probably 18,000 ft. below sea level and the corresponding anti-clyne towards Harlech and the Rhinogs would be 20,000 ft. high. Sea fossils have been found on Snowdon, so we know that during the submergence, the rocks we now climb were part of the sea floor.

There are other features of the English landscape which need explaining. Rivers are plain enough. They have carved valleys for themselves out of the great plateau, are constantly carrying down the hill debris to lower levels, occasionally changing course, or sweeping out a wider curve; but there is little about their work which cannot be observed and understood.

Lakes are another matter. They are in the simplest form, accumulations of water in hollows. The hollow may be an old crater, or a dip in the sea floor now elevated, or a subsidence. The meres of Cheshire may be of this last type, some authorities tracing the cause to the subterranean rock salt being dissolved.

The other great type of lake is due to a barrier across a river or stream bed. The barriers are produced in several ways. In the case of the Norfolk Broads the tides have deposited debris, piling it up across estuaries and damming the river flow. The water has then flowed over the land behind this barrier, and the broads are literally a broadening of the river.

The lakes and tarns of our mountains are nearly all due to the formation of barriers by glacier moraines. The soundings of the lakes has shown the submarine scenery to be a continuation of that above water, so the lakes are all drowned valleys. Screes form the dam sometimes, or a tributary stream forms a delta to block another stream.

There is another aspect of scenery changes to be considered and one which can easily be studied in this country. The coast line is being changed constantly. In Norfolk the tides are bringing down cliffs, in Lancashire they are piling up sand dunes. At Chesil Beach there is a great natural breakwater formed by shingle deposited by tides; around Dungeness villages which once were ports are miles from the sea; off Penmaenmawr there was once a rich kingdom (Helig) and at low tide the walls can be seen from a boat; the Wash is a drowned land. So the story goes on, and all round our coast line forces are working, pulling down here to pile up there. The geology of the cliffs is of tremendous

importance. Having discovered the materials and their qualities it is easy to see why the Cornish coast is wild and fantastic, whilst the Kentish is white with sandy shores; why the east coast has such miles of sands, while in North Wales there is but a narrow strip and that broken up by rocks. The direction of the tides is important. You can find the general trend by looking at the groynes. For instance, if on the east coast the shingle is piled on the south side of the groynes, you know the tide runs northward and this is so, towards Norfolk where the tide coming south from the North Sea is baffled by that coming down the Channel and bends back. Along the south coast the sheltered hollows of the east side of the groynes are not accidental but are due to the great rip of the tide coming in from the Channel backed by the Sou' Wester from which you now shelter.

We have now touched upon most of the causes of our scenery's charming variety. There are others, such as the effect of vegetation in retarding denudation, of the dissolving of minerals, such as limestone, so that all the ledges are upside down, and the work of man as a geological agent. But as we have said earlier, the best way of grappling with geology is to study a small area, aided by the 1 in. geological map and the publications of the Geological Societies. Most of the country has been thoroughly explored, but there are still discoveries to be made and even if you never do anything but increase your own concept of the land, it is worth while knowing the reasons for hills and valleys, lakes and streams.

SCENERY.

"Evolution of a Coast Line—Barrow to Aberystwyth and the Isle of Man."	1920. 10s.
"Geology of Yorkshire."	P. F. Kendall and H. E. Wroot, 1924. 15s.
"Man as a Geological Agent"	R. L. Sherlock, 1922. 20s.
"English Coastal Erosion"	E. M. Ward, 1922. 8s. 6d.
"Local Geology"	A. M. Davies, 1925. 1s.
"Introductory Geology"	L. V. Pirsson and C. Schuchert, 1925. 20s.
"The Changing Face of England"	A. Collett, 1926. 10s. 6d.
"Geological Maps"	R. M. Chalmers, 1926. 12s. 6d
"The Scenery of England"	Lord Avebury.
"Notes on Geological Map Reading."	A. Harker, 1926. 3s. 6d.
"Geology in its Relations to Landscape."	J. Henderson. 12s. 6d.
"Scientific Study of Scenery"	J. E. Marr, 1900.
"Publications of Geological Survey, Geological Society."	

WAYSIDE ARCHITECTURE.

ENGLISH buildings whether castles, churches or dwelling-houses, have been erected in one or other of four styles, each of which is typcial of the prevailing style of a period in history. These styles, however, overlap and change gradually from the one to the other.

1. Saxon, before 1066.
2. Norman, 1066—1175.
3. Gothic, 1150—1570.
4. Renaissance, since 1550.

The style of architecture can be determined from the arches, pillars and capitals, mouldings, window tracery.

1. Saxon buildings have round arches, long and short stones at the angles, and between the lights a pillar shaped like a baluster.

2. Norman buildings have the arches semi-circular, massive pillars standing on a square base with a cushion-shaped capital having a square base. The mouldings are zig-zag (see diagram of Prestbury Norman doorway). There is no tracery in the window head.

3. Gothic architecture is divided into three phases :—

(1) Early English.
(2) Decorated.
(3) Perpendicular.

The pointed arch is the distinguishing feature.

(1) Early English, 1175—1285.

Windows : Narrow, lancet-shaped. Two or more lights under one dripstone. The plate between lights and dripstone is pierced by a circular or lozenge shaped opening (plate tracery).

Pillars : Circular or octagonal.

Capitals : Bell-shaped, plain or ornamented.

Mouldings : Round—dog-toothed ornament.

(2) DECORATED, 1275—1370.

Capitals: Bell-shaped adorned with carved foliage in wreaths.

Windows: Lights separated by vertical bars of stone known as the mullion. Tracery is formed by curved bars of stone giving the "bar tracery" of the period.

Mouldings: Ornamented with ball flowers and four-leaved flower.

(3) PERPENDICULAR, 1375—1575.

Pillars: Capitals have usually a circular neck, with an octagonal base or head.

Windows: The mullions (vertical bars) run through to the dripstone. The transoms (horizontal bars) divide the window into panels.

Arches: The arches are flatter. The characteristic tracery is the Tudor rose and Tudor crest.

Later the arches become flatter still, and heraldic shields are filled in as tracery.

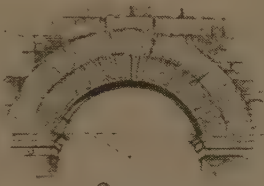
4. RENAISSANCE.—An imitation of Greek and Roman architecture.

The pillars are copies of the Doric Column with a square or round slab; the Ionic Column with a scroll at the top: or the Corinthian Column with a leaf tracery at the top.

Wayside Architecture

Roman & Saxon Styles

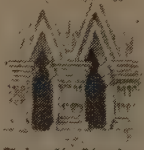
Roman
(Semicircular)



Roman
(Segmental)

Roman Arch
The Newport Arch at Lincoln.

Single Light



Triangle Heads

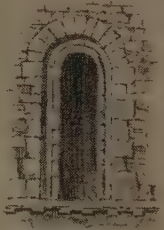
Two Light

Saxon (prior to Norman Conquest)

Wayside Architecture

Norman Style. 1066 - 1175.

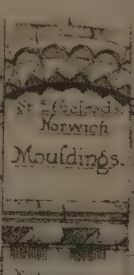
Similar to Roman, but more ornamented. Very elaborate moulds.



Early Window

Doorway at Prestbury, Cheshire.

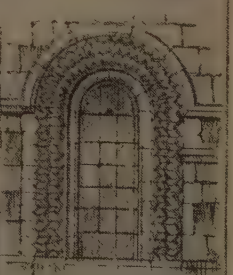
Window, Malmesbury Abbey



St Helen's, Norwich

Mouldings.

Malmesbury Abbey 1140



Iffley Church, Oxford. 1160

Wayside Architecture

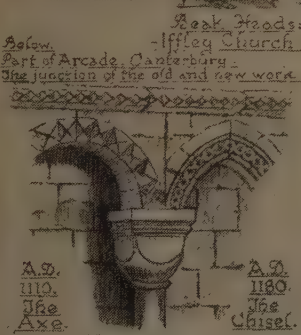
Norman Style

Iffley Church.
East End. A.D. 1220

Gable Cross

Iffley Church
South Side. 1160

Beak Heads
Iffley Church 1160

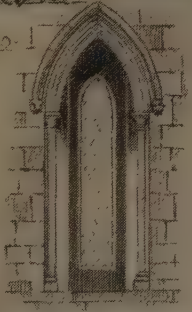


Below.
Part of Arcade, Canterbury.
The junction of the old and new work.

A.D. 1110. The Axe.

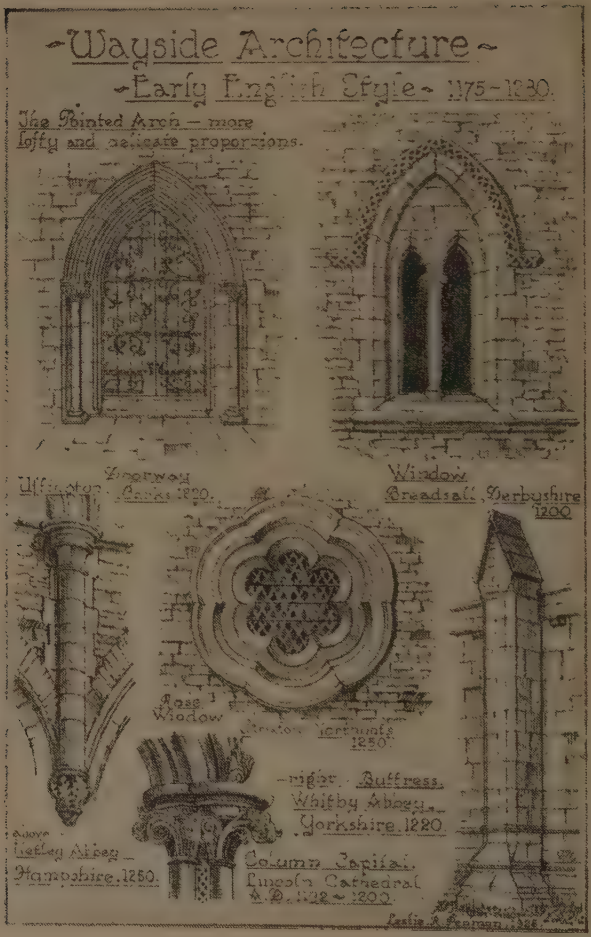
A.D. 1180. The Chisel.

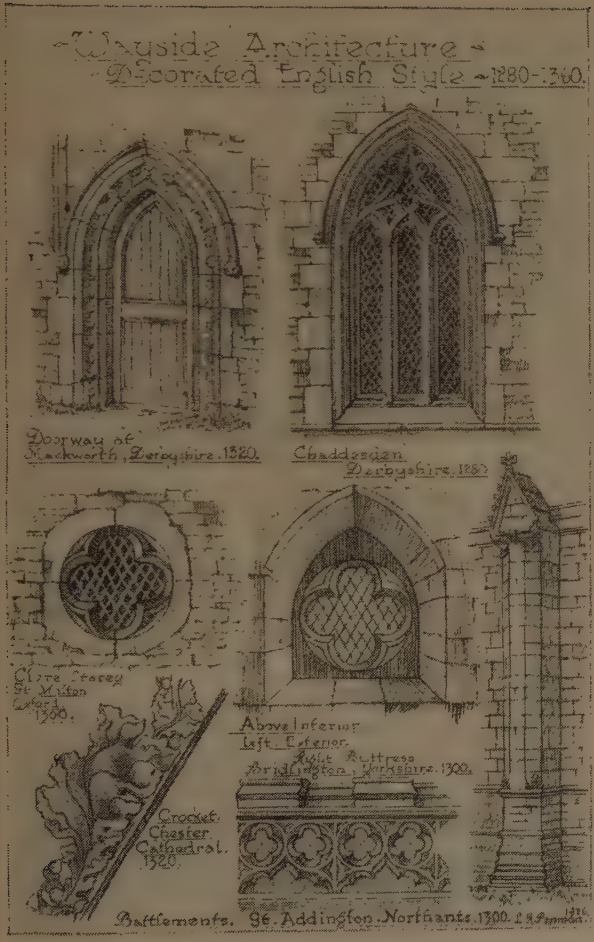
Transitional
Norman to Early English

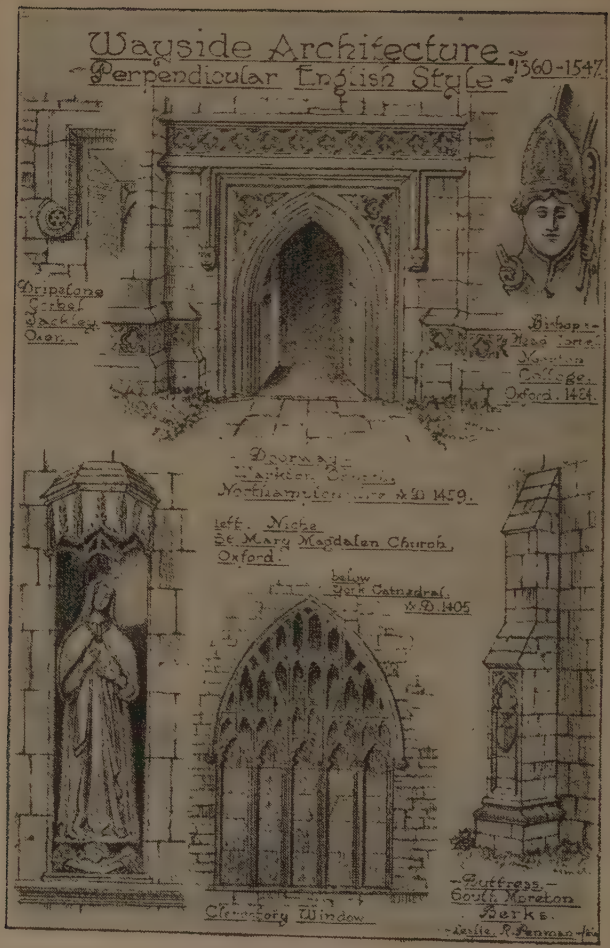


Lancet Window.
Early English.

Leslie R. Bowman


-Wayside Architecture-
-Early English Style- 1175-1280.
The Pointed Arch — more lofty and delicate proportions.
Doorway
Uffington, Berks. 1220.
Window
Breadsall, Derbyshire
1200
Rose Window
Lincoln Cathedral
1250.
-right- Buttress.
Whitby Abbey.
Yorkshire. 1220.
-above-
Netley Abbey.
Hampshire. 1250.
Column Capital.
Lincoln Cathedral
A.D. 1128 - 1200.
Leslie A. Freeman


Wayside Architecture
Decorated English Style - 1280-1360.
Doorway at Mackworth, Derbyshire. 1320.
Chaddesden Derbyshire. 1280
Clare Priory St. Mildred Lord 1300.
Above Interior
Left Exterior.
Right Buttress
Bridlington, Yorkshire. 1300.
Crocket. Chester Cathedral. 1320.
Battlements. St. Addington. Northants. 1300.


Wayside Architecture
Perpendicular English Style
1360-1547
Dripstone
Arches
Sackley
Oxon.
Bishop
Wood Farm
Magdalen
College
Oxford. 1424.
Doorway
Market Cross
Northampton
A.D. 1459.
left. Niche
St. Mary Magdalen Church
Oxford.
below
York Cathedral.
A.D. 1405
Buttress
South Moreton
Berks.
Leslie R. Fennemore del.
Clerestory Window

Wayside Architecture
Tudor Style 1500-1600.
Tudor Rose.
Henry VII Chapel
Westminster
Abbey. 1503-1520.
Ornament
Christ Church
Hall. Oxford
A.D. 1528
Window
Yaxley Church
Northants A.D. 1500.
Haddon Hall Derbyshire.
15th & 16th Centuries
right Magdalen Church.
Oxford A.D. 1517.

Wayside Architecture
Elizabethan Style 1558-1603.
Gable from
Chester
Lower
Cheshire
The Brereton Arms, Cheshire

WEATHER LORE.

TO forecast the weather with absolute certainty is, of course, impossible even to a trained meteorologist and the local weather prophet is notoriously unreliable.

But the weather is a subject of such vital importance to wayfarers, that it is essential that they should be able to make the very best use of the signs that are to be had. There are four sources of information which, taken singly, are not of very great value, but in conjunction often yield a vast amount of useful and fairly reliable information as to the weather to be expected during the coming day or two.

These are :—

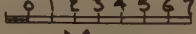
1. The newspaper or wireless weather report.
2. The barometer.
3. Nature's weather signs.
4. Local weather signs.

The barometer and the natural weather signs will, as a general rule give a clue to the weather conditions for the next 24 or at most 48 hours. Long spells of fine weather and very cold winters do cast their shadows beforehand, and those who have learnt to read them can see these signs, but the majority of wayfarers have to rely on the weather report for the "further outlook."

The best and most reliable method of weather forecasting is, first of all, to read the official forecast and outlook, and grasp what the weather conditions are over Western Europe, what changes are forecasted over our area, and then watch the barometer and the local weather signs to see if the expected changes, if any, are taking place, and at what rate.

For example the weather outlook in the summer may be that "an anticyclone (fine calm weather area) is situated off our S.W. coasts, whilst secondary depressions are moving across the British Isles. Further outlook: continuing unsettled." If the barometer remains low or unsteady, and natural signs point to rain, the unsettled weather may be expected to last. But if the barometer begins to rise slowly and the natural and local signs

Geological Sketch Map of the Lake District



Sand & Alluvium

Post-Carboniferous

Carboniferous

Kirkbymoor Flags
Bannisdale Slates
Coniston Grits
} Silurian

Coniston Limestone
Borrowdale Volcanics
} Ordo-vician

Skiddaw Slate (Ordovician & Cambrian)

} Palaeozoic

Carrock Complex
Skiddaw Granite
St. John's Vale Microgramite
Buttermere Granophyre
Eskdale Granite
Shap Granite
} Igneous Intrusions

St. Bees Head.

Bassenthw

Lowes Water

Ennerdale

Wastwater

Black Combe

A.R. 1923.

Reproduced by courtesy of Ramblers' Federation.

point to fine weather, it can safely be assumed that the anti-cyclone is spreading eastward and that a period of fine weather is coming. By this means it is often possible to get such information half a day before the official forecast.

First of all, let us consider the official forecast and the general question of weather.

The science of meteorology has advanced considerably in the last ten years, due to an increased knowledge of the conditions of the upper air, and to a greater number of reporting and observing stations.

The efficiency of the weather forecasts are limited at present because of the lack of weather reports from the Atlantic. As our weather is largely governed by conditions and changes taking place over the Northern Atlantic, it is obvious that this lack of information, only met to a slight extent by ships' wireless reports, is a serious handicap.

The old idea of anti-cyclones being areas in which warm air was flowing spirally downwards and outwards in a clockwise direction and cyclones or depressions areas in which the air flowed in an anti-clockwise direction towards a low pressure centre where the air rose and flowed outwards at a higher level, is now regarded as only part of the truth.

According to the latest theories, based on observations of the air taken by means of aeroplanes and captive balloons, there are two spheres of air surrounding the earth. The lower sphere varies in thickness from about 12 miles at the equator to about three to four miles at the poles. The temperature in this lower sphere falls as one rises (hence at a mountain top the air is always colder than at the sea level) and the temperature is higher over the equator than over the poles. The upper sphere, however, does not vary in temperature as one rises, and curiously enough the temperature is always greater over the poles than over the equator.

For the purpose of this article, however, the upper sphere does not concern us. In the lower sphere the air over the poles and equator is almost stagnant but masses of air break away and move off into the latitudes between these two areas.

In these middle latitudes—in which England lies—the weather is much less regular than either further north or further south, and will depend very much on the behaviour of these moving masses of air.

It is now recognised that cyclonic disturbances ; rains, winds, snow, etc., result from the meeting of two such air masses, one warm from the equator, the other cold from Polar regions.

When these masses of air meet they do not mix but keep a very sharp line between themselves. This incidentally explains why we get such extraordinarily sudden changes of temperature within a very short time.

The colder air tends to sink and the warmer air rises and flows some way over the cold air.

The meeting of these two currents of air at widely different temperatures not only results in winds but also in a precipitation of moisture in the form of rain or snow, and the formation of masses of cloud.

It is along the line of such a meeting of air currents that depressions are formed.

If, for example, a mass of equatorial air covers the British Isles, keeping the Polar air well to the northward, then we have fine, warm weather.

The cold winter of 1925–26 was largely due to the masses of Polar air drifting further southward than usual, and the heavy snowfalls were the result of the meeting of equatorial warm air with this colder mass of air.

The notes in the newspapers by meteorological correspondents are usually written in a very simple but intelligent manner and should help wayfarers to understand the conditions governing the weather from time to time.

THE BAROMETER.

The movement of the barometer will, as we have shown, indicate the rate at which changes in pressure are taking place and will in conjunction with a weather report enable anyone to see what is taking place.

A slow and steady rise usually indicates an improvement in the general weather conditions—and a slow and steady fall indicates a general deterioration in the conditions.

A sharp fall indicates a temporary break and is usually followed by a sharp rise.

> "Long foretold—long last,
> Short notice—soon past."

A quick rise after the barometer has been very low points to a strong wind or gale.

The actual level of the barometer is not of such vital importance to a forecaster as whether it is moving and at what rate.

A high barometer in winter or spring will not mean fine weather in the same way that it does in summer. An anti-cyclone in winter usually means fog and frost, in spring it is often associated with dull grey skies or even drizzle.

The kind of weather indicated on the dial is of no value whatever except in the summer and it a pity that manufacturers cannot be persuaded to leave off the misleading words.

It is, of course, more difficult to forecast in winter as the question of fog, frost, and snow all depend on such things as ground temperature, radiation and the source of the prevailing air current (whether tropical or arctic).

Wayfarers should remember that the barometer falls one inch for every 1,000 ft. in height. If a new barometer (or a pocket aneroid) be taken from Southport to Buxton it will register an inch lower—and should therefore be reset to correspond with the reading at sea level.

NATURE'S WEATHER SIGNS.

The following signs are collected from outdoor men and have all been tested in practice. None of them are infallible but on the whole they will be found of considerable value if used in conjunction with a barometer and other forecasts.

Farmers and men whose life is spent out-of-doors do develop an instinct for " feeling " what weather is coming. But it is an instinct that becomes much more highly developed in some men than in others and it is unwise to assume that every farmer is a reliable weather prophet.

Many of the best of these prophets are unable to tell you why they are sure a particular weather change is coming—like the old backwoodsman who always knew the north, they " just feel it ! "

But if they can be got to analyse their own weather lore it will generally be found to depend on one or other of the following nature signs.

Every wayfarer should accumulate his own store of weather lore, based on his own observations extending over considerable periods.

As mentioned above these nature signs are usually only applicable to short forecasts, but now and again one comes across men who can give remarkably accurate forecasts of long dry spells.

The writer well remembers a farmer forecasting the long hot summer of 1921 as early as April of that year.

In such cases it is a general appearance of the types of clouds, the tendency to rain or not when clouds do appear etc., that gives the clue, but it is impossible to describe such things in a book. They can only be learnt by observations in the open air.

CLOUDS, ETC.

Observation.	Weather Forecast.
Dawn.	
High dawn	Bad sign.
Low dawn	Good sign.
Distant sky, to West at sunrise, dark.	Rain by noon.
Dazzling sun early in the morning.	Unsettled.
Grey sky at sunrise.....	Fair day.
Rainbow in early morning. Wind East.	Rain.
Do. Wind West	Rain passing away.
Heavy morning mist	Probably fine.
If accompanied by dew-drops, shining on spiders' webs on the grass.	Fine, hot day.
During the Day.	
Dark shapeless ragged masses of cloud often moving fast.	Rain.
High level clouds stationary. Lower level of ragged clouds moving fast.	Unsettled.
Towering castles of cloud with hard edges.	Thunder.
Two or three different levels of cloud moving in different directions.	In summer a certain sign of thunder.
Soft white fluffy clouds like towering billows.	Fair.
Clouds high up moving fast.	Brief spell of bad weather.
"Mare's tails" very high up moving from N.W. during bright westerly weather.	Wind probably will back to S.W. and freshen to a gale.

Observation.	Weather Forecast.
"Fish clouds" (long and narrow) high up stretching across sky from E. to W.	Stormy.
Do. from N. to S.	Fine.
Gradually increasing hazy cloud forming over whole sky.	Wet to-morrow.
Sky has a washed and "smudgy" appearance.	Unsettled period.
Dark clouds break up with dark blue sky between. Wind veering N.W.	Fine.
Do. Wind remains S.W.	Brief fine spell.
Ripple marks on a cloudy sky like sand on seashore.	Rain certain.
After very wet period if rains shows tendency to change to fine drizzle for a day or two.	Long period of fair weather coming.
Mackerel sky (broken bits of puffy cloud).	Fine.
Mackerel sky changing to sheet of cloud after some days of fine weather.	Rain.
Dark blue sky	Wind or rain not far off.
Light blue sky	Fair.
Sunset.	
Sun sets on grey, pale yellow or greenish sky.	Rain.
Do. bright yellow sky..	Windy.
Do. red sky without clouds, if followed by grey morning.	Fine.
Wind falls at sunset.....	Fine.
GROUND, ETC.	
Heavy dew at night.....	Fine next day.
Gossamer on grass in the early morning.	Fine.

Observation.	Weather Forecast.
If each web covered with dewdrops on a misty morning.	Sure sign of fine and hot day.
Cobwebs across the lanes from hedge to hedge.	Fine day coming.
Black snails across your path.	Rain.
Clouds lifting off hills in the evening but mist in the valleys.	Good.
Ascending mist on hills....	Bad.

Distant Hills, etc.

Blue haze over hills in the evening.	Fine to-morrow.
Hills clear when with one's back to the sun.	Fair.
Hills clear when facing the sun.	Bad.

MOON.

Moon rises large and red...	Unsettled.
Halo round but some distance from the moon, often showing slight orange or yellow tints.	Stormy.
"The new moon embraces the old," i.e., when moon is waxing if dark part of moon is visible.	Rain to-morrow.

The following signs from birds, animals and insects are very far from infallible. This does not mean that these creatures are misled, on the contrary there is every evidence that they possess acute powers of feeling impending changes in the weather.

At present, however, our observations of the signs they exhibit as a result of this knowledge are very scanty, and until a mass of observations can be collected and correlated it is impossible to place any great reliance on the following signs.

It is, however, known that rabbits dislike feeding on wet grass, and will feed early in the day when rain is coming.

Dogs and deer have wet noses, so that they can feel the wind. If a man wants to find the direction of the wind he wets his thumb and holds it up ; the slightest breeze is felt by a cooling of that side of the thumb. The principle is the same with the dog's wet nose.

Similarly fish know beforehand when a river is going to rise in spate.

Birds and Insects.

Rooks go far afield.....	Fine.
Rooks fly low cawing loudly in morning.	Unsettled.
Gnats and flies fly high....	
Birds fly high (to feed on insects).	Fine.
Swallows fly low	Unsettled.
Bats squeak on the wing...	Rain.
Spiders strengthen webs...	Rain.
Cock goes crowing to bed..	Rain.
Peacock bawls loudly.....	Rain.

Animals.

Cows lying down.....	Fine.
Cattle and sheep restless...	Rain.
Rabbits feeding in the daylight.	Wet night.
Mountain sheep seek shelter of rocks.	Rain.
Sheep turn their tails to the wind.	Rain.

Fish.

Fish swim near surface....	Rain.
Trout leap high	Rain.

Flowers and Plants.

Convolvulus closes its petals.	Rain.
Scarlet pimpernel closes....	Rain.

Hawkweed. Known as nature's barometer. Several species but all have bright yellow flowers like small dandelions. Common on waste ground in country and towns. Flower fully open.	Rain unlikely for some hours.
Flower inclined to close....	Rain within a few hours.

Note : The Hawkweed usually closes some hours before rain arrives.

LOCAL WEATHER SIGNS.

The foregoing signs as regards clouds and wind will not apply in all districts. In hilly districts certain winds are more likely to cause rain than others.

It is therefore often found that such things as a wind from a certain hill, a cloud cap on a mountain, or mist lying on a fell top, are all recognised signs.

Often they are very reliable in a normal summer and are worth remembering, but they will rarely yield information that cannot be obtained by other and more general signs.

Old men living in the mountains can often read the weather by the appearance of the mountains, the colour, visibility, the presence and form of cloud and mist and they are often very accurate.

Altogether the study of weather signs is a most fascinating pursuit and wayfarers should keep accurate records of their observations.

BIBLIOGRAPHY.

"Everyone's Book of the Weather"	Williams, Sheldon Press. 2s. 6d.
"The Weather".....	People's Library, Benn. 6d.
"Weather Observations and Aids to Forecasting."	Donald W. Horner. Allen and Unwin. 2s. 6d.

TREES.

TO all of us, whether country or town born, there is a great appeal about a bit of woodland. Once inside, the foliage shuts us off from the outer world and we feel that here is being lived a life quite remote from our own.

In childhood we love a wood still more, for there is always about it the romance of the unknown—the woodland path leads, we cannot see where—the wood extends in our imagination until it is a New Forest at least.

Perhaps it is because we can recapture something of the spirit of childhood that we are so fond of a wood!

The wayfarer is not limited to woods for his study of trees as many of the finest specimens of the English countryside are lone outposts.

In bygone times man depended for his supply of fuel, material for home buildings, and for his very livelihood on his intimate knowledge of the different varieties of trees.

To regain something of this knowledge is to make wayfaring infinitely more interesting.

The number of commoner varieties of British trees is not large and with the help of a naturalist friend or a good book with photos or diagrams progress can soon be made.

It is possible to rely for identification on a knowledge of leaves or bark or seeds, but there is little doubt that the wayfarer will find it best to aim at recognition by means of a general distant view.

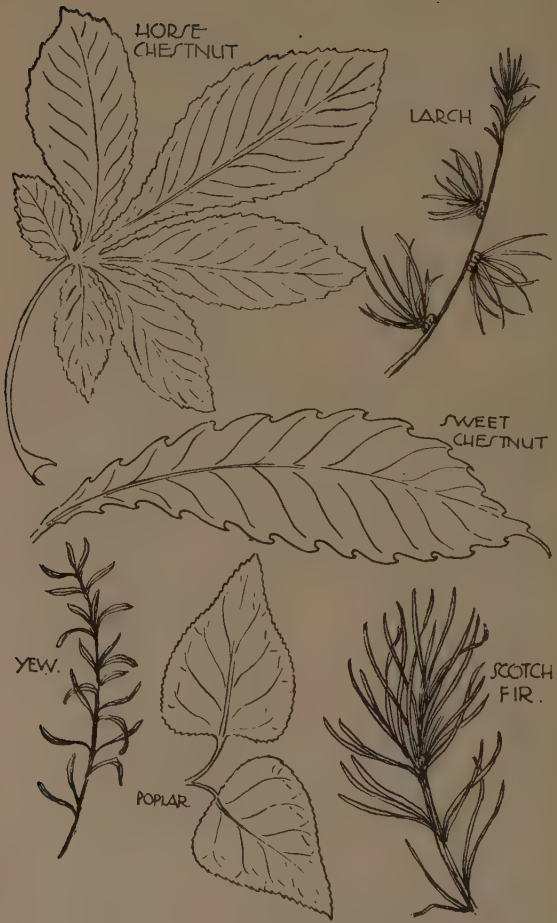
Each species has a typical form—a characteristic shape—and it is this which should first of all be studied. Of course, it must be remembered that no hard and fast mould is followed and that trees of the same species vary very much in both size and shape according to soil and location.

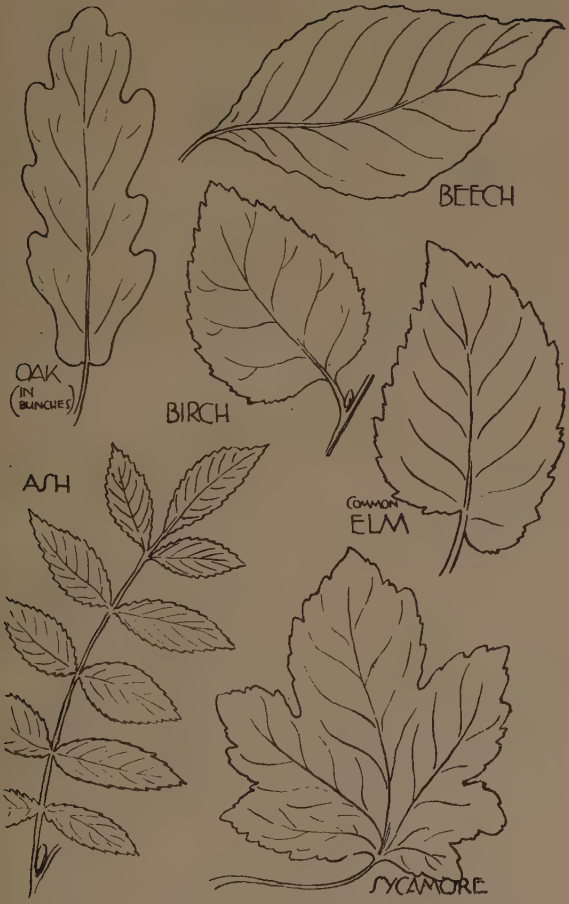
The typically fully-developed tree will not be found in a wood where it has to keep up a constant struggle for existence against its neighbours to secure sufficient light and air. The most typical specimens will be found as isolated trees in hedgerows or parks, where it is free to develop its own characteristics unhampered by others.

This general shape of a species can be seen to good effect by moonlight—when all details are blurred and only the outline is seen.

Name.	Recognition by Means of			General Notes.
	Appearance.	Trunk.	Leaf.	
Ash	Rarely seen on ploughed land. Lower branches grow straight out, higher ones hang down, highest ones grow upward. Often found on banks of stream.	Trunk very straight and tall. Smooth grey bark, cracking into ripples in older trees.	Each branch ends in a grey twig which has two black buds at its tip—best method of identification when not in leaf. Leaves appear late, and are feathery, in pairs, with toothed edges. Flowers hang in dense bunches from ends of twigs. "Keys" in autumn hang on after leaves have fallen.	The Ash was the Holy Wood (Igdrasil) of the Vikings and Norsemen. This tradition survives in remote parts of the Lake District where ash-wood milk spoons are used to prevent souring. Roots are very widespread and prevent any vegetation growing in its vicinity.
Alder	On banks of rivers or swampy places.	Dark, rough, hard bark.	Leaf broad at top with depression instead of point at apex. Leaves are sticky.	Always found close to water, the roots help in binding firm the water bank.
Aspen	A variety of Poplar, but not as tall.	Tall, straight trunk. Rather rough bark.	Easily recognised by its quivering leaves even on stillest summer day. Leaves, broad ellipse.	Buds are sticky.

BEECH	Inverted bowl. Branches sweep downwards, then upwards. Grass or plants rarely grow beneath it.	Beautiful smooth silver-grey bark often blackened in streaks where rain has run down. Widespread roots.	Oval, with a blunt point, slightly waved edges.	Known as "The Mother of the Forest" as it shades other young trees. Provides good shelter from a shower of rain, but not from a long downpour.
SILVER BIRCH....	Suggestive of feminine grace and beauty—dainty tracery of branches and twigs.	Silvery-brown bark glistening almost white at time. Bark cracks and peels off.	Broad at base, narrow at point, glossy surface with uneven double row of teeth, small and large alternating.	In April the tiny leaves cover the Birch with a very pale green mist which is quite distinctive. The bark is used by N. American Indians as material for canoes, huts, drinking vessels, etc.
CEDAR	Two common Cedars: The Cedar of Lebanon and The Deodar. The former is easily recognised by its terraces of foliage.	Thick, rough bark, of a pale greenish brown colour.	The leaves are in tufts and are harder than the Larch. Cedars are evergreen. Bigger cones than Larch—standing up and grey-brown.	Cedar from Lebanon was sent to Tyre for the building of Solomon's temple.
SWEET CHESTNUT.	A very bushy tree with heavy spreading branches which sweep downwards.	Dark coloured bark with deep grooves running spirally round the trunk as if the tree had been twisted.	Dark green and glossy; stout rib running up the centre; straight veins to the edge end in sharp points. Flowers in May. Nuts grow in bristly fruit-balls containing two or three nuts.	Live to a great age. A writer in 1664 mentions a Chestnut which in 1135 A.D. was written of as "The great chestnut of Tortworth." In 1820 this tree had a girth of 52 ft. In Italy the nuts are ground into flour, and in France are used in place of potatoes.


HORSE-
CHESTNUT
LARCH
SWEET
CHESTNUT
YEW.
POPLAR
SCOTCH
FIR.


BEECH
OAK
(IN BUNCHES)
BIRCH
COMMON
ELM
ASH
SYCAMORE

Name.	Recognition by Means of			General Notes.
	Appearance.	Trunk.	Leaf.	
Horse Chestnut.	No resemblance to Sweet Chestnut. Branches sweep down but rise towards tip.	Rough scaly bark.	Twigs have curious horseshoe marks—really scars where a leaf stalk joins the twig. Flowers in snowy spikes in May. Hard smooth fruit balls containing one nut.	Not a native tree. It was introduced into England 500 years ago. Grows so very quickly that it is possible to plant a nut and sit under the tree 14 years later.
Common Elm....	The tree of the meadows. Found in deep, damp soils—not in Woods as a rule. Tall irregular outline. Bole and branches can be seen in places between the patches of foliage. Trunk forks into two main branches.	Usually has brushwood growing to the base of the trunk. Rough bark, grey and corky.	Small leaf, broad at base, narrow at point with toothed edges, rough and hairy on the upper surface; soft and hairy below.	Elms have a habit of letting branches fall without warning—hence, a bad tree to camp or shelter under.
Wych Elm.....	More graceful than Common Elm, with longer branches.	No brushwood at base of trunk.	Leaves, larger and broader. Branches longer and less twisted.	Said to be named Wych owing to Scottish belief in its power against witchcraft.

SILVER FIR.....	A tall tree with silvery green foliage. Only pointed at the top when young.	Rough bark, lighter coloured than Spruce.	The old twigs are smooth. On the underside of the leaf is a silver white line on each side of the central vein. The cones stand up and their scales fall off when the seeds are ripe.	Often mistaken for the Spruce.
DOUGLAS FIR....	Tall conical tree, light green foliage.	Thick red brown bark, with deep grooves.	The old twigs are smooth. The underside of the leaf is white. The cones are egg-shaped, hang down, and do not lose their scales.	
HORNBEAM.....	A large tree with leaves like the Elm and trunk like the Beech. A distinctive feature is the shape of the trunk which is not round but almost square, with concave sides.	Smooth bark (cp. Elm).	Oblong or broad lancet shaped—serrated at the edges. Leaf stalk is short. The buds lie along the twig (Beech buds grow out from twig at an angle).	A very hard wood. Common in Epping Forest and locally elsewhere as far north as Cheshire.
HAWTHORN.....	Small bushy tree covered in May with white blossom.	Grey bole, fissured and crooked.	The leaf has from three to seven lobes.	The commonest hedgerow tree.
HAZEL	A hedgerow tree well known for its spring catkins.		Broad almost circular leaf with serrated edges, ending in a sharp apex.	The first appearance of the long golden green catkins is one of the most looked for signs of spring.

Name.	Recognition by Means of			General Notes.
	Appearance.	Trunk.	Leaf.	
Larch	One of the cone-bearing trees which shed their leaves in winter. Conical in form.	Dark brown, often having green patches.	The leaves appear in tufts. The cones are pink when young, and are only about 1 in. in length and egg-shaped.	
Lime	In winter looks very black against the sky and twigs appear dead. In spring twigs become olive green, tinged with crimson with red buds.	Green shoots near base.	Heart-shaped leaf, thin; with serrated edge. Leaves placed alternatively on the twig. In Autumn leaves turn yellow—not gold or brown—and fall early.	Visited in summer by myriads of bees, who feed on the honey-juices of the flowers.
Lombardy..... Poplar	Distinctive shape—narrow tapering form, with branches growing nearly straight upwards. There are no horizontal branches.	The bark is nearly black and in old trees has cork-like growths.	The leaf is broad at the base and almost triangular, and the margin is finely serrated. Foliage is dark green.	Used as an ornamental tree on account of its quick growth and sentinel-like appearance. The wood is of little value, makes a smoky fire.

OAK	Dead branch at the top of the tree on which birds often perch.	Narrows first and then widens again as it rises from the ground. Dark, rough bark.	Feather shape (lobed) with a strong central vein.	Famous from the earliest days of history. *e.g.*, the Greek crown of oak leaves and the Druidical Yule log. Does not reach maturity until it is 200 years old, and will live as long as 1,000 years.
PLANE	Often confused with the Sycamore. In winter strings of bristly fruit balls hang like beads on a string. The Sycamore and Maple have no such fruit balls.	The bark flakes off in winter leaving yellowy patches.	The leaves have fine pointed lobes. Their surface is smooth and polished. If a leaf be plucked the new bud can be seen below.	The tree of the city, where it flourishes unharmed by the smoke and soot.
SPRUCE	The tallest European tree. Flourishes on mountain sides. Conical in form. Resembles drooping feathers.	Brown scaly bark. Branches grow in regular layers round the trunk. Twigs are rough.	The cones are long and pointed and hang down. They do not lose their scales. Length 5 in. to 7 in. The needles are set all round the twig, and have a sharp point.	This is the Christmas Tree. It is not native to England but comes from Norway and the Alps.
SCOTCH PINE ...	Miscalled "Scots Fir." Recognised by the brilliant colouring of its trunk and by its habit of losing its lower branches, ending up with just a tuft of foliage at the top of the very tall tree.	Rough, scaly bark, varying in colour from purple at the base to orange at the top.	Needles are in pairs, and of a greenish blue shade. The cones are woody whereas all other conifers have papery cones. The size of cone is about 2 in. to 3 in. Blunt at both ends.	It is a native of this country and the vivid colouring of the trunk and green of its foliage make it a very beautiful feature of our mountainous and hilly country.

Name.	Recognition by Means of			General Notes.
	Appearance.	Trunk.	Leaf.	
Austrian Pine..	Tall like Scotch Pine.	Black bark.	Leaves set in pairs, dark green, bunched together at end of twig.	
Sycamore	A very large tree with very even outline; large masses of heavy foliage. Heaviest foliage of any British tree. Will grow on hill tops.	Bark peels off in flakes giving the trunk a mottled appearance.	The leaf has fine oval lobes — three larger ones again being three lobed. Red stalks. Honey dew hangs from leaves in summer. Pale greenish yellow flowers hang in tassels.	Called the tree of mourning in Scotland, perhaps because noblemen hung their foes from its branches. Attains maturity in 50 years.
Willow	A common tree on the banks of streams, often has the young branches cut off for basket-making, giving it a stumpy form.	Deeply fissured main trunk. Slender secondary branches dipping into the water.	Lancet-shaped leaves, broad in the middle and narrow at top and bottom. Silky hairs on young leaves lie along the length of the leaf (cp. Osier, whose hairs lie along veins).	A very well-known tree of the river side, swaying its stems in the slightest wind.
Yew	An evergreen but not a cone-bearing tree. Generally of good girth but not above 20 ft. or 30 ft. in height. Very ancient gnarled appearance.	Reddish brown bark very smooth; peels off in thin flakes. The wood below is orange-red.	Narrow leaves (almost as thin as Pine needles) set in rows on each side of a twig. Very dark green. Crimson berries rather like an acorn in shape.	Often found in churchyards, probably due to churches being built on sites of Druidical Yew Groves. Often said to be due to use of yew for making bows — but imported yew was used for this purpose.

BIBLIOGRAPHY.

"Our Wayside Trees"	Forster Robson. Thornton Butterworth. 4s.
"Trees Shown to the Children" ...	T. C. and E. Jack.
"Wayside and Woodland Trees" ..	Step. 7s. 6d.
"British Trees at a Glance"	Robson, Holden and Hardingham. 1s.
"Trees and How They Grow"	Nuttall. Cassell. 7s. 6d.
"Woodland Trees"	Crabtree Epworth Press. 1s. 6d.
"Countryside Rambles"	W. S Furneaux. Geo. Philip & Son Ltd.

BIRDS.

MAN owes much to the birds. Their value is not only æsthetic—and no one appreciates this value more than the wayfarer—but also utilitarian.

The realisation of the national importance of bird life from an economic standpoint is only now forcing itself upon popular attention. For too long we have been content to accept the estimate of "the man-with-the-gun" as the final word. Science is now showing us that there is in nature a balance line of safety between the various forms of life. To interfere with this artificially only calls down inevitable retribution on our heads.

The destruction of a sparrow may save a few ears of corn, but it increases the quantity of insects who do infinitely more harm than the sparrow would have done.

The plagues of caterpillars, following the activities of the "sparrow clubs" of 1917 are well-remembered even now in Northern England.

The destruction of trees by insect pests on the Thirlmere estate was prevented only by the erection of nesting boxes in large numbers. The resulting influx of bird life accomplished what man was powerless to do, and thousands of trees were saved.

Migration of Birds.

The annual migration of birds is one of the wonders of the out-of-doors. As the spring approaches, an urge fills the bird life of the southern climes and with one accord they press northward in their thousands along well-recognised routes, intent on founding a family in the northern country.

What is the object of migration? Probably one of the chief reasons is that there would not be sufficient food in winter to support all the birds and so many of them go south to sunnier lands where vegetation is more abundant. Their place is partly taken by arrivals in the autumn from Arctic regions, but as these are much smaller in number there is enough food for them as well as for our resident birds. But there is little doubt, that is one of nature's methods of eliminating the weak, for many perish in bad weather whilst crossing the seas.

The spring migration is usually direct and swift, and the birds often arrive on the coast completely exhausted—and little wonder when one thinks of birds like the golden-crested wren, only 2 in. long, crossing from Africa to England.

One of the greatest mysteries is how the birds find their way, not only back to the same country but actually in many cases to the very same tree—truly, one of nature's greatest secrets.

It used to be thought that the migrations took place on fixed dates—in fact the Red Indians made their calendar from the birds' movements, and even to-day the farmers of Holy Island sow their wheat when the pied wagtails appear.

But it is now known that the dates vary according to the weather, and only rough guide can be given as to their probable date of arrival. There is a delay of as much as three weeks in wet, cold springs.

AVERAGE DATE OF ARRIVAL OF SUMMER MIGRANTS.

March 25—Wheatear.
,, 27—Chiffchaff.
April 5—Ring Ouzel.
,, 8—Sand Martin.
,, 12—Tree Pipit.
,, 15—Blackcap.
,, 15—House Martin.
,, 18—Sedge Warbler, Swallow.
,, 22—Reed Warbler.
,, 25—Corncrake, Cuckoo.
,, 29—Swift, Nightjar.
May 6—Red Backed Shrike.

Wayfarers will find it an interesting hobby to watch for these migrant birds and compare the dates from year to year.

RECOGNITION.

"What was that bird?" is a question that one hears on nearly every rambling expedition. Fortunate is the rambling party that includes amongst its members someone with a real knowledge of bird life.

Most wayfarers, however, never get beyond the question, and though they may really appreciate in a general way the beauty of flight and song, yet they miss much through their inability to recognise the various species.

Recognition is difficult as very often a momentary glimpse of a bird on the wing or the distant call or song is all that is seen or heard. Trees and flowers may be examined at leisure but the average handbook on birds, with its details of colouring and plumage and of the shape of bills and feet, is little use to the beginner, who just sees a bird flash past.

The table which follows has been compiled to meet this difficulty. Information is only given of outstanding features, such as the usual haunts, the call, position of the nest and any peculiar features of flight of the commoner birds of these islands.

It should be noted that whilst the "resident" birds may be seen all the year round the "migrant" birds will only be seen during the periods given in the table.

RECOGNITION TABLE OF COMMONER BRITISH BIRDS.

Name of Bird.	Where Commonly Seen.	Resident or Migrant.	Call and Song.	Position of Nest.	Characteristic Habits.
BLACKBIRD	Gardens, hedges, coppices.	Resident.	Beautiful singer. Alarm note "cluck, cluck" or "spink, spink."	Low down in furze or holly bush.	When disturbed utters alarm note, flies off and lands some distance away always with tail raised and extended fanwise. Listens on grass for worms, head on one side like Thrush.
BLACKCAP	Woods and coppices, low down in leafy shade.	April to October.	Beautiful song, second only to nightingale.	Well hidden in hedges.	
BULLFINCH	Woods, coppices, thick hedges, rather skulking.	Resident.	Plaintive "whee-ou." Song is a soft fluty melody.	Shallow nest lined with moss and wool.	When singing has a side to side motion of tail and body. Very fond of dock seeds.
CHAFFINCH	Gardens, hedges, fields.	Resident.	Joyful song call note, "Pink, pink."	In big trees or hedgerow elms.	Undulating flight. Runs and hops.
CHIFFCHAFF	Woods.	March to October.		Bramble thickets	Small green warbler of skulking habits.
CUCKOO	Countryside generally, and in thickly wooded districts.	March to October.	"OOk-koo."	Lays in other birds' nests.	Often mistaken for a sparrow-hawk even by other birds. Flight direct and rapid.

CURLEW	Sea-shore. Moors during nesting season.	Resident.	"Cur-lee" shrill whistle.	On the ground in hollows.	A shy bird. Flies with neck forward and legs behind. Walks sedately. Seldom runs.
CROW.....	Wanders about country (cp. Rook).	Resident.	Hoarse "Kawn" rougher note than Rook.	High tree or ledge of cliff.	Laboured direct flight with flapping wings. Alone or in pairs at most.
CORNCRAKE	Meadows and cornfields.	April to October.	"Crek, crek," rasping noise.	In hollow on the ground.	Rarely flies. Seldom seen, but often heard, sometimes for hours together. Runs fast. As big as Partridge.
COOT	Lakes, meres, rivers.	Resident.		Large nest in reeds.	Wary bird. Flies fast, legs hanging behind. Like a large moorhen with white frontal plate.
WILD DUCK OR MULLARD.	Lakes, ponds, rivers, sea.	Resident.	"Qua-ark."	Near water. Made of reeds.	Waddles. Swims well and dives. Flies fast and high, with long neck stretched out. 2 ft. bill to tail.
DIPPER	Streams and rivers.	Resident.	Song like wren. Can be heard even in winter from rock in mid-stream. Call note "chitchit."		Rapid flight along stream. Can dive into water and swims or walks along bed of stream. Like a big wren with white breast. Stands on rocks or stones dipping and curtseying.

Name of Bird.	Where Commonly Seen.	Resident or Migrant.	Call and Song.	Position of Nest.	Characteristic Habits.
FIELDFARE	Chiefly seen in companies.	October to May, spends Summer in Norway, etc.	Call "chack chack" and faint warble.		Straight flight, high up, quick beats. Often with Thrushes and Redwings.
FLYCATCHER (Spotted).	Woods, fields and gardens.	May to August.		In ivy near wall, or against garden or woodland tree.	Perches on dead bough or railings from which he darts and seizes some insects, returning again to same spot.
GOLDFINCH	Meadows, gardens and commons.	Resident.	Sweet singer.	Made of moss and feathers.	Often in flocks on thistle heads in bare meadows—show yellow of wings—will rise in undulating flight as they move away.
GREENFINCH	Fields.	Resident.	Call "Sweer twee-er." Warbles. Also a soft inflated scream.	Hedges.	A very sociable bird.
HERON	Lakes and estuaries, lives in colonies.	Resident.	Occasional hoarse "Houk."	Tops of very high trees.	Large majestic bird—long legs trail as it flies. Stands in water fishing with long beak.

LITTLE GREBE OR DABCHICK.	Sluggish rivers and ponds, often among the reeds.	Resident.	Usually silent. A chattering cry in the breeding season.	Among reeds or rushes.	Short squat bird that dives at the least alarm. uses its wings to swim under water, comes to surface some distance away among the reeds.
RED GROUSE	Moorlands.	Resident.	Male alarm note "Go-back, go-back, go-back.' Also crowing croaking note.	Among the heather.	Native of Great Britain and no other country. Feeds on tips of twigs of heather, crowberry, etc., and seeds of grasses. Feathered down to tips of toes.
BLACK HEADED GULL.	Seacoast, but also inland locally in colonies.	Resident.	Familiar harsh cries.	Often in reeds by inland water.	Recent observations show the Gull is becoming an inland farm bird, finding an easier life than on the sea coast. Sails in the wind. Does not dive.
SPARROW HAWK ..	Woods.	Resident.	Sharp shrill cry.	Firs and evergreen trees.	When hunting flies along hedge or wood side, suddenly pouncing on any bird. Catches on wing but devours on its perch. Not seen so often as Kestrel.
KESTREL	Fields, commons, moors and mountains.	Resident.	"Kee-kee-kee" sharp scream.	Nest of Magpie or Crow or a hole in a tree.	Graceful bird. Hovers motionless in the air when in quest of prey—20 or 30 yards up—suspended with rapidly beating wings—then falls straight down to ground.

Name of Bird.	Where Commonly Seen.	Resident or Migrant.	Call and Song.	Position of Nest.	Characteristic Habits.
JACKDAW	Cliffs, quarries, pastures, and in cities.	Resident.	"Jee-ak" or "Chee-ack."	Holes or clefts.	Often seen in winter with flocks of rooks in pastures.
JAY	Woods.	Resident.	Harsh scream, "Chayk" a scolding note, like tearing a piece of calico.	In fork of sapling 10ft. above ground.	Shy. Hops on the ground. Flirts tail up and down when perching.
KINGFISHER	Streams and lakes.	Resident.	No song. Shrill call note.	In wall or bank or river, long tunnel chamber at end. Nest made of undigested bones.	Skims over stream or river; a glorious flash of turquoise as it flies past.
MAGPIE	Woods, etc.	Resident.	Chattering mocking note.	Tall trees.	Rapid beat of short wings. A very showy bird. Long tail, skimming flight.
MARTIN, HOUSE ...	Farms and in towns.	May to November.		Mud with small opening.	Shorter tails than swallows; lower part of back is white.
MARTIN, SAND	Near water, sand pits and gravel banks.	May to October.		Tunnels ending in a chamber.	A small dull member of the swallow tribe.

MOORHEN	Commonest of all water birds on any bit of water.	Resident.	"Kruk-ruk-ruk" Croaking note.	Rushes and weeds.	Flies slowly with legs dangling in water or hanging in the air. When swimming has a curious bobbing action.
OWL, BARN	Old buildings.	Resident.	High scream. Snores in its hole.	Ruins, outhouses, towers, etc.	Strictly nocturnal.
OWL, TAWNY.....	Well wooded parts.	Resident.	"Hoo-hoo-how-ow-ow-witt."	Often uses deserted nests of rooks or crows or builds at foot of tree.	Flies usually by night, buoyant flight, each wing stroke giving an impulse.
PEEWIT (Green Plover), (Lapwing).	Moors, meadows and seaside.	Resident.	Shrill "ee-wit."	On ground.	Runs fast on ground. Jerky flight, whirring wings
PHEASANT.....	Woods—but feeds in open.	Resident.	Loud squawk.	In woods—but bred in captivity in many districts.	Rapid, powerful, noisy flight but glides down long inclines on open wings.
NUTHATCH	Woods.	Resident.	Sharp shrill note.	Hole in tree or wall, entrance made up with mud.	Perches like statue—head raised and still. Runs up and down tree.
NIGHTJAR	Wooded districts.	Our latost summer migrant. Late May to September.	Sharp little whistle. Song a long "churr."		Best time to see it is dusk. Silent flight, turns and twists like a bat. Strikes wings together with a clap, and utters whistle. Rests lengthwise on branch as it "churrs."

Name of Bird.	Where Commonly Seen.	Resident or Migrant.	Call and Song.	Position of Nest.	Characteristic Habits.
REDSHANK	Seashore, estuaries.	Resident.	"Teeoo-tu-tu."	Well-hidden on beach or seaside fields.	Swims and dives. Wades for food. Red legs easily seen.
REDBACKED SHRIKE	Not common in the North.	May to August.		Thick thorn hedge 10 ft. from ground.	"The Butcher Bird," because it impales insects, mice, beetles, etc., on thorns as a larder. Bold bird.
ROBIN	Woods, fields, gardens, etc.	Partial migrant.	Sweet but limited song.	Hole in bank or wall, etc.	Never flies far—up and down motion. Long hops on ground.
ROOK.....	Generally common except on hills.	Resident.	Hoarse "Kaw."	Tall trees in colonies.	Lives in a community in rookery in tall trees. Smaller than crow. Fly in large numbers.
RING OUZEL	Moors and hills.	February to October.	"Chuck-chuck."	Under bramble or a hole in wall.	
REED WARBLER ..	Rivers, lakes.		Sings by day and night.	Deep nest in reeds.	Difficult to see—hides in reeds—creeps about.
REDS	Commoner in the South.	April to October.		Hole in tree on edge of wood or river or in park.	A small bird—male is of gay colour. Red tail.

SEDGE WARBLER ..	Ponds with bushes.		Sings loudly.	In reeds.	Noisy chattering protest when disturbed.
SKYLARK	Meadows, fields, low hills, downs.	Resident.	Well-known song.	In middle of open field.	Rises straight up into air until almost lost to sight, then descends spirally—but finally drops straight down.
SPARROW, HEDGE ..	Fields, hedges, and gardens.	Resident.	Alarm note shrill "iss." Callnote "Peep, peep."	Hedges.	Flits in and out of cover-creeps about bottom of hedge.
SPARROW, HOUSE ..	Every inhabited area.	Resident.	Chirrups.	Under eaves and in walls.	Usually in parties of six or more. Hops. Straight flight point to point.
STARLING	Common everywhere in England.	Resident.	Mimics other birds. Chuckles, whistles and croaks.	Holes or in trees.	Roost in crowds. In autumn and winter fly and feed together in mass formation. Bobs head running.
SWALLOW	Usually around human dwellings.	April to October.	Low musical twitter.	Under eaves.	Wavy flight in curves from side to side. Migrate in flocks.
SWIFT	Flies high, in lowlands.	May to August.	Shrill "Swee-ree."	Under eaves.	Lives on the wing—unable to fly off level ground. Long, narrow, scythe-like wings.
STONECHAT	Mountains, moorlands, and upland country.	Resident	"Tick-tick."	Furze or bramble.	Dipping flight—jerks his tail.

Name of Bird.	Where Commonly Seen.	Resident or Migrant.	Call and Song.	Position of Nest.	Characteristic Habits.
TERN	Sea coast and sea marshes.			In sand hills.	A common seaside bird.
THRUSH, SONG	Fond of gardens.	Partial migrant.	Repeats little phrases: "Judy, Bo-peep, You'll do it."	All kinds of places.	Runs on lawn then stops—listens for a worm—then digs into the ground for it. Long hops.
THRUSH, MISSEL ...	Small woods, timbered parks and tall hedgerows.	Resident.	Harsh rattling cry and wild churring note.	Usually in fork of tree.	Rapid flight, quick wing beats dipping motions. Lives a roving life.
GREAT TIT	Near houses, orchards, gardens, wooded country.	Resident.	"Saw sharpener" or squeaky wheelbarrow.	Hole in tree or wall.	Yellowish-olive back and blue-black line down breast.
BLUE TIT	Gardens.	Resident.	"Tzee-Tzee.	Hole in tree or high up in hedge.	Blue head—back yellowy-green. Small bird. Fond of meat or cocoanut hung up in garden.
COLE TIT	Clumps of trees near commons and moors or on edge of woods.	Resident.		Hole in post or tree or often mouse burrows.	Grey-brown back—glossy, blue breast. Small.
LONGTAILED TIT...	Hedgerows.	Resident.	High pitched "Zi-zitt."	Elaborate nest.	Darts from hedge to hedge—undulating flight. Small. In flocks in winter. Long tail.

TREE PIPIT	Woods.	April to October.	Short and sweet.	Middle of field or railway bank.	Like a lark. Utters song on wing having sprung into the air and descends with fluttering wings, to same spot.
TREE CREEPER	Trees, woods.	Resident.	Plaintive "cheep." No song.		Solitary. Climbs trees spirally in jerks like a mouse—lives on insects from the bark.
PIED WAGTAIL	Common in most parts.	Partial migrant.	"Chizitt, chizitt."	Ivyclad walls.	Dipping flight across fields.
GREY WAGTAIL ...	Hilly country, fond of water.	Partial migrant.	Similar to Pied.	Loose stone walls. Often near water.	Short tail. Soft and delicate colouring, yellow breast.
YELLOW WAGTAIL...	Meadows, adjoining sluggish stream.	April to October.			Struts about close to cattle, feeding on flies they disturb.
WHEATEAR	Fields and meadows, moorlands.	March to October.		Difficult to find, rabbit burrow or hole in wall.	Lively, springy little chap. A few white feathers on rump. Sits on tussock of grass or fence—jerking tail. Quick darting flight.
WHINCHAT	Open fields.	April to September.	"Tick."	Under tussock of grass or in sloping bank.	Hangs on tall stems. Like Stonechat but bluer.

Name of Bird.	Where Commonly Seen.	Resident or Migrant.	Call and Song.	Position of Nest.	Characteristic Habits.
GREEN WOODPECKER.	Woods.	Resident.	Laughing whistle, a "yaggling" note.	Trees without low branches. Hole made in tree.	Climbs trees with jerky motion. Flies with rapid wing beats then with half closed wings.
GREATER SPOTTED WOODPECKER.	Fairly common in very well wooded districts.	Resident.	Rattling hollow sound—made by its beak against the tree.	Trees without low branches. Hole made in tree.	As Green Woodpecker, but quieter colouring. Keeps to higher branches.
WOODPIGEON OR RING DOVE.	Woods and parks, common.	Resident.	"Take two coos Davy. Take two coos." Reedy, bubbly note with above rhythm.	Flimsy nest in trees.	Strong direct flight with flapping wings, ending in a volplane or looping the loop.
WHITETHROAT	Widely distributed.	April to September.		Low down in bush or clump of nettles.	In April may be seen on telegraph wires drop into hedge, throwing up tail like Blackbird, leaps from twig to twig.
WREN	Hedge bottoms, woodland undergrowth, brambles or commons.	Resident.	Beautiful song, clear round notes not unlike canary.	Ivy on wall or in bank.	Reddish-brown. Tail erect when hopping.
GOLDEN CRESTED WREN.	Coniferous plantations.	Resident.	Very faint song.	Most beautiful nest suspended from end of bough like a hammock.	Smallest of our birds. Yellow tint on back and light yellow crest.

WILLOW WREN ...	Common in most parts.	Pass northwards in April and May. Return South in August.	Liquid notes. Start high up scale — dropping in force and pitch.	Near or on ground—well concealed.	Very like chiffchaff but bigger.
YELLOW HAMMER..	Hedgerows and generally in cultivated districts.	Resident.	Sings from top of hedge, "A little bit of bread and no cheese."	On or near ground. Sometimes in the grass.	Hops on ground. Neck, head and under parts bright yellow.

BIBLIOGRAPHY.

"Birds of the British Isles" (2 Vols.).	T. A. Coward. Warne. 12s. 6d. each.
"Ready Guide to British Birds"...	Carter. Sidgwick & Jackson. 1s. 6d.
"A Pocket Book of British Birds".	Elms. West-Nawman. 3s. 6d.
"Common British Birds and How to Identify Them."	Hodges. Epworth Press. 1s. 6d.
"A Year with the Birds	Warde Fowler. Macmillan. 6s.
"Our Resident Birds"	E. F. M. Elms. Thornton Butterworth. 4s.
"Our Migrant Birds"	E. F. M. Elms. Thornton Butterworth. 4s.
"British Birds"	Kirkman (People's Edition). 1s.
"Common Wild Birds of Great Britain."	Price, Gurney and Jackson. 1s. 6d.
"Publications of the Royal Society for the Protection of Birds."	82, Victoria Street, London, S.W.
"Countryside"	(Quarterly) 9d. British Empire Naturalists' Association, 8, Glamorgan Road, Hampton Wick, Middlesex.

Name.	Recognition.	Habits.
FOX	Very richly coloured—reddish brown, white beneath. Back of the large ears are black, and tip of bushy tail white. Tail is pale red. Muzzle black with black whiskers. Hair on soles of feet is deep red. Claws light brown. Size: Head and body 27 in. to 34 in. Tail, 12 in. to 15 in.	Found in many parts of England owing to the protection it has received. Fairly common in Scotland. Lives in burrows in sandy soil, woods, thickets, slopes of hills, etc. Seldom seen—remains concealed during the day, but abroad in the evening. It is endowed with great cunning and vigilance. Fond of following water but avoids tracks, gateways, skyline, etc. Can be heard barking at night. Food: Flesh of animals, birds, reptiles, young lambs, chickens, etc.
MOLE.....	Cylindrica body, long pointed snout, short legs, no external ears, eyes of little use, but eyelids open. Body hairs stick out vertically so that animal can move either way easily. Broad spade-like forepaws, with strong claws turned outwards. Upper surface of hind feet thinly clothed with fur. Size: Body and head, 5½ in. Tail, 1 in. to 1½ in. Colour: Varying shades of black, occasionally grey, rarely black.	Common throughout England and Scotland, less so in Wales. Shows preference for light soils as a rule. It is continually working, moving and digging very rapidly. It is said to work during the day at regular hours. It is very voracious and cannot live for long without food owing to its diligence. It drinks frequently and so passages are made to ponds, etc. Food: Mainly earth worms, larvae, etc.

Name.	Recognition.	Habits.
HARE.....	Head moderate size, convex above, broad muzzle, etc., neck short, depressed nose, the upper lip divided by vertical cleft. Body large. Large and prominent eyes. Ears long, narrow, rounded at tips. Hind legs much longer than fore legs. Claws curved and sharp. Tail nearly as long as head. Soles are covered with fur. Size: Head and body 21 in. to 22 in. Tail 3 in. to 4 in. Colour varies. Tawny grey, tinged with red in upper parts, under parts white. Ears tipped black above, white below. White patch on tail.	Widely spread over England, but in North of Scotland occurs as the Mountain Hare. Food: Grass, clover, turnips, bark of young trees, etc. Searches for food during evening and night. Rests during the day in its "form." Has extraordinary speed, vigilance, hearing and sight to help it to escape its enemies. Length of hind legs enable it to travel up hill more easily than down.
RABBIT.....	Rounder and plumper than hare. Ears and hind legs are shorter. Otherwise similar to hare. Size: Head and body 16 in. to 17 in. Tail 3 in. to 4 in. Colour: Brownish-grey mingled with tawny, under parts white, tail dark above.	Common everywhere—especially in sandy soil. Lives in large colonies in burrows (cp. hare). Has regular paths marked by constant use to and from feeding grounds—particularly easily seen in dewy grass. Whilst feeding, sentinels are posted who indicate approach of enemies by drumming on ground with hind feet. Not so fast as a hare. Unlike hares—young rabbits are born blind and naked—hence "burrow life." Food and other habits same as hare.

SQUIRREL	Occurs in two varieties—brown and grey. The brown is the original English squirrel which is rapidly becoming less common as the grey squirrel extends its domain. It has hind legs longer than forelegs, a very bushy tail nearly as long as the rest of the body and at certain times of the year the ears are tufted. Size: Head and body, 8 in. to 8½ in. Tail, 7 in. to 8 in. to end of tail hairs. Colour: Brownish red upper parts, white below. The grey one is not nearly so pretty an animal and is rather larger.	Fairly general throughout the woodlands of England and Scotland. Food: Nuts, beech mast, acorns, buds, etc. Fond of sitting on its haunches, holding its food in its forepaws as it eats. Very agile, jumping amazing distances from branch to branch. Frequently resorts to the ground. Is fairly easily stalked. Dozes in cold and bad weather, but does not go into a complete torpor as on warm days it may be seen even in winter.
OTTER	Head broad, elongated, flattened, with small ears. Legs short in proportion to its body. Feet short, rounded and webbed. Claws well developed on each toe. Soles of feet naked, but hind pair not completely naked to heel. Fur short and compact. Tail more than half length of body. Size: Head and body 25 in. to 29 in. Tail, 15 in. to 16 in. Colour: Deep brown, reddish tinge, under parts whitish. Chin and throat white.	Still fairly common in wild rocky districts of Somerset, Devon, Monmouth, streams and lakes of Westmorland and Cumberland and North of Scotland, and occasionally in rivers elsewhere. Always in region of water. Food: Fish and eels, vermin, etc. Habits are almost entirely aquatic. Exceedingly agile and speedy in water, but has to return to land in order to eat its food. Leads a nomadic life—builds its "holt" in a bank usually with entrance below water line.
STOAT (Ermine)...	Elongated body of nearly cylindrical appearance. Neck rather long and thick. Ears rather large, broad, rounded with a lobe at posterior margin. Long whiskers and long hairs on end of tail. Legs short in proportion to body. Soles of feet covered with hair, but each toe has a bare pad. Fur short. Size: Head and tail 10 in. to 11 in. Tail, 6 in. to 7 in. Female smaller. Colour: Reddish-brown above, under parts yellowish-white. Tip of tail black. Often shows seasonal change to yellowish-white. (cp. Weasel.)	Common in many parts of England and Scotland. Frequents stony places, thickets, etc., where its agility and slimness enable it to escape dogs, etc. Sometimes takes possession of rabbit burrow. Food: Game, and other birds, young rabbits and hares, rats, voles, etc. It is a good climber and often pursues its prey in trees. Has great speed. Very courageous if cornered.

Name.	Recognition.	Habits.
WEASEL	Description is similar to that of the stoat, but it is a smaller animal. Head and body 8 in. to 8½ in. Tail, 2 in. to 3 in. Female rather smaller. Colour: Rather redder than the stoat, but no seasonal change and tip of tail is not black.	Rather less common in England than the stoat, but its habits are very similar. Food: Small birds, rats, mice, voles, etc. Follows its victims into their underground burrows. It is a good climber like the stoat and very pugnacious.
BADGER (Brock)..	Rather broad body and short legs. Soles of feet are completely covered with hair. Size: Head and body 26 in. to 27 in. Tail, 7 in. to 8 in. Colour: Characteristic "badger colour" caused by mixture of long hairs (reddish, white, black). General colour yellowish-grey with black. Face white with black streaks running longitudinally through the eyes and ears.	Found fairly generally in most counties, but it is seldom seen owing to its very shy nature. Fond of using beaten tracks and pathways. It is nocturnal, spends daytime in its burrow in some thicket, wood, disused quarry, etc. Rarely abroad in bad weather or snow. Has very acute hearing. Is very harmless. Food: Roots, fruits, nuts, birds' eggs, insects, small reptiles and frogs. Digs for wasps and grubs (look for traces here).
HEDGEHOG	Body oblong and concave above. Short legs and body nearly touches the ground. Short broad ears. Claws rather long, moderately curved. Back and sides protected by spines, face and under parts covered with long, coarse fur. Tip of muzzle naked and black. Size: Head and body 10 in.; Tail, 1 in. to 1½ in.	Common in England, abundant in the Lake District and Scotland. Food: Insects, worms, slugs, reptiles, frogs, chickens, eggs, etc. Purely nocturnal animal. Sleeps during the day in a safe retreat generally in roots of a tree or thicket. Goes into complete torpor during winter. Usually silent but has a peculiar sound between a grunt and a squeak. Its vision is not good, but hearing and smell are very acute. Moves fairly rapidly when on the prowl at night.

BIBLIOGRAPHY.

"British Wild Animals"	Mortimer Batten.	C. A Pearson Ltd.
"Tracks and Tracking".....	Mortimer Batten.	Chambers.
"Publications of Royal Society for Protection of Animals."	Jermyn Street, London, W.	Piccadilly,
"Training in Tracking"	Gilcraft.	Pearson.

WILD FLOWERS.

"Flowers are words
Which even a babe may understand."

THE wayfarer, afield in all seasons of the year, owes much to the wild flowers and plants for the variety they provide.

The blue mist of wild hyacinths dancing in their thousands in the woodlands, the tangle of wild flowers in the unspoilt country lanes in June, the richness of the meadow all yellow with buttercups, the summer glory of red poppy and golden gorse, the purple carpet of heather on the moors, and perhaps above all, that touch of warmth and colour in the depth of winter—the dying bracken; these are a few of the beauties given us by the collective effect of flowers and plants.

The wayfarer who delights in these pictures will want to know more intimately the varied wild flowers, for besides their collective effect each individual has a beauty and an interest of its own.

The extraordinary number of wild flowers and plants render it impracticable in the short space here available to give any adequate guide to recognition.

There are several excellent books available rendering recognition a comparatively simple matter in ways that involve no study of technical botany.

We shall therefore content ourselves here with indicating a few of the wonderfully interesting things which the wayfarer may observe in plant life, without necessitating an intimate knowledge of the different species.

These facts may be the means of showing something of the marvellous processes which are used by nature to ensure the continuance of plant life and which result in the beauty of an English countryside.

Let us first of all think for a moment of the amazing ubiquity of plant life. We are so apt to expect that the meadows will all be green with grasses, and the hedgerows all spangled with flowers that we overlook the struggle for existence which is going on all the time.

The luxuriant plant life of June does not suggest strife and yet every inch of ground has been hotly contested, and each little plant showing above ground has probably been the cause of half-a-dozen others going down in the struggle. Plant life fights for the existence in a two-fold

manner. Firstly, it struggles to obtain the amount of ground, sunlight, air and food necessary to continue its own existence. Secondly, it produces seeds in such prodigality that may ensure a continuance of the species, a hundred seeds may be produced in order that one may survive and grow into a plant. Its own struggle for existence is carried on unceasingly and by many and various devices.

Some plants trail along the ground sending up shoots at intervals, others come above ground in the darkness of the hedge bottom and then climb upwards into light and air.

These climbing plants are worth studying for the variety of their methods of clinging. Some have tendrils which twine around branches and twigs, others cling by means of their leaf stalks, whilst others again twist their own stems around the support and amongst these one can find a difference, for some always twine in a clockwise direction and others in a counter-clockwise direction. The hop turns the former way and the bean the latter.

When the plant that does not climb is above ground, it still has a struggle for its neighbour may overshadow it. Large broad leaves are developed, not only to catch sunlight, but also to prevent other plants growing too close. But it is in the efforts to continue the existence of its own species that the greatest variety of interesting methods are found.

In order to produce seeds it is necessary for the pollen dust to be transferred from one part of the flower to another. This the flower rarely does itself and most flowers rely on insects to do the work.

To attract the insect the flower adopts all manner of devices. There is, for instance, little doubt that the colouring of flowers is simply a means of attracting insects, and the different colours attract different varieties of insects.

Thus, the bee prefers blue, violet, crimson and purple, whilst flies and beetles have a partiality for brown and yellow. Night flying insects prefer white, as obviously these are most conspicuous in the dark. Wasps appear to have a preference for dark brown.

The scent of flowers attracts insects—bees prefer the fragrant ones and flies delight in offensive odours like that of the Stinking Gladwin.

The honey secreted in many flowers is the real bait for insects and whilst it gorges on the sweet juice, its body

brushes against the pollen or in some other way effects the required transfer of pollen dust.

In the case of the Flower of Parnassus, the apparently tempting drop of honey hanging within the flower is an illusion and the insect retreats unfed.

Every device possible to facilitate the visit of the insect is adopted; landing platforms and wide open flowers assist its entry.

In one case at least the flower has a trap door which allows the insect to enter but keeps it imprisoned for three days—thus making quite sure that it does its job!

Besides insects, birds assist in pollination, and there are some species which rely on water to carry their pollen from one flower to another.

When the flowers produces seeds it has to get them planted. Some rely on scattering them in great profusion straight on the ground below, trusting that one out of the many will survive.

But others scatter them farther afield by having an explosive seed box which suddenly pops open and the seeds are flung several feet away. Others provide them with wings in order that the wind may bear them away. Thistle seeds for example, are borne aloft as high as 20 or 30 ft., and dandelion seeds float far away on their parachute-like tops.

Animals assist in at least two ways. Some seeds have hooks attached which catch in the hair of a passing animal, others are coated with a sweet-flavoured substance, so that birds and animals feed on them and the seed itself being encased in an indigestible covering is deposited on the ground often far away.

Although plants rely so much on insects and animals in order to continue their existence as a species, they also suffer from the depredations of birds, animals and insects.

Grasses constitute the main food of grazing animals and they only exist by reason of great vitality and vigour of growth. Many protective devices are adopted to prevent animals and undesirable insects feeding on the plant or flower. The hairs of the hawkweed and the poisoned hairs of the nettle are two protective devices against animals. The burning taste of the leaves of the Cuckoo Pint, and the strong flavour of the Peppermint and Watercress are other examples of natural protection.

It is possible that the likeness of the Brooklime to the Nettle, the Scentless Maywood to the Chamomile, and the Dead Nettles to the Stinging Nettles are examples of protective mimicry.

Stems are covered with prickly hairs or sticky juice to prevent insects crawling up and stealing the honey. On the other hand, curiously enough, there are several carnivorous plants, which obtain part of their food by feeding on insects.

The best known example is the Sundew which has hairs protruding, which contain a sticky digestive juice.

It has been proved by experiments that the Sundew possesses the power to know when suitable food is near. It will even move slightly towards a suspended piece of meat. Once a fly is caught by the hairs there is no escape and gradually the juice exuded by the flower digests the insect, and abstracts the nitrogen from it, on which the flower feeds.

The coming of spring brings with it the annual miracle of nature, and the appearance of the spring flowers in the woods is a yearly joy to the wayfarer.

During the winter all plant life is quiescent, the struggle for existence is abated—but with the end of winter a thrill seems to run through all nature.

It is not just the advent of warmer weather, for even in a cold spring the bracken shoots lie green and active just below the surface of the ground, ready to spring up once the air is warmer. And in high altitudes, Alpine plants hidden beneath a thick coating of snow and ice begin quite suddenly to stir into activity. Some of these plants are apparently provided with means of generating heat, for they melt the snow and force their way up into the air above.

BIBLIOGRAPHY.

"Our Wild Flowers and How to Know Them."	E. Fitch Daglish.	Thornton Butterworth. 4s.
"Common British Wild Flowers Easily Named."	T. E. Waltham.	Oxford Press. 3s. 6d.

THE NIGHT SKY.

LONG ago, when men lived out-of-doors most of their lives, the star-spangled sky at night was their luminous clockface and their bedside book.

The movements and positions of the groups of stars were familiar to them and as they gazed upwards from their tent doors in the desert, or whilst guarding their flocks from wild animals throughout the long night, they passed away the time by making up stories about them.

Unfortunately, they could neither read nor write and so most of these stories have been lost, but a few of them were handed down from father to son from generation to generation until at last men learnt the art of writing and so were able to make a permanent record of those few that were known.

The Chaldeans, the Greeks, the Arabs, and the South Sea Islanders all had their own stories of the stars and the Red Indians told their legends round their Council fires for generations.

The advantages of these stories to the modern wayfarer, apart from the historical and romantic aspect, is that they do assist in fixing in the memory the various constellations.

The disadvantage is that they rather encourage the survival of the idea of the sky as a flat canopy or even spherical shell, containing stars of different sizes but all much the same distance away. In this way much of the wonder of a universe stretching out into space for millions of miles with stars so distant that they only appear as vague and indistinct areas of light, is lost.

Just as a little knowledge of birds and trees adds much to the interest of daylight wayfaring, so does ability to read the book of the sky add enormously to the pleasure and interest of wayfaring in the darkness.

First of all, a few of the old star stories will be described.

THE PLOUGH.

Most wayfarers will be familiar with the Plough or Charles Wain or the Great Bear as it is variously called, and many will know that the two right hand stars point to the North Star.

On a clear night two stars side by side can be seen just between the Pole Star and the Plough; they are called the Guards and the legend is that they were put there to stop the Plough adding the Pole Star to its group.

The Red Indians, however, had a different story regarding the Plough. To them it was a group of seven fishers going round the Pole Star, endeavouring to catch the tail of the fish on the opposite side of the Pole Star. This fish's tail is the Big W or Cassiopeia.

Round and round these fishermen go but never do they catch the fish for it too goes round the Pole Star—"The star that never moves."

THE DRAGON OR DRACO.

Between the handle of the Plough and the Pole Star is a long trailing group known as the dragon.

The Greek legend of Perseus slaying the dragon just in time to save Andromeda the daughter of King Cepheus from being eaten by the monster, will be familiar to all readers of Greek mythology. All the characters in the legend were given places in the sky.

The dragon has been pointed out above, Cepheus lies beyond the Pole Star from the pointers, whilst Perseus and Andromeda appropriately close together are not far from the Big W.

THE HAIR OF BERENICE.

Berenice was a Queen of Egypt renowned for her lovely hair. During the anxious time of her husband's absence in battle, Berenice vowed that she would give her hair to Venus, if her husband could only win the battle.

Returning from battle victorious the King was angry to find Berenice without her beautiful hair. The priests and astronomers were consulted and they said it could not be brought back, but they would put it in the sky.

Berenice's hair is just below the handle of the Plough.

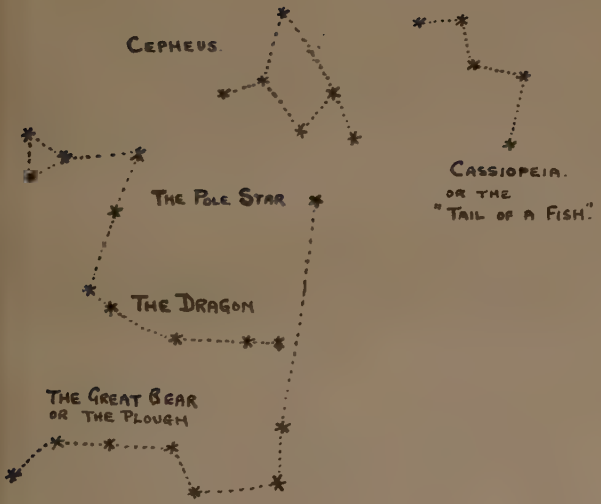
ORION THE HUNTER.

Another familiar constellation—but it is not so well known that he is guarding himself with his shield against the Bull which is about to charge him.

The Bull is just above Orion to the right.

Below to the left is the hunter's dog—Sirius. Just above this is the Little Dog—and above this again are the Giant's Eyes.

Orion is the largest constellation. It is only visible from autumn to early spring.


CEPHEUS.
CASSIOPEIA.
OR THE
"TAIL OF A FISH."
THE POLE STAR
THE DRAGON
THE GREAT BEAR
OR THE PLOUGH

THE SEVEN SISTERS OR THE PLEIADES.

Draw a line from the Pole Star through centre star of Perseus and continue till a bunch of stars close together is observed. Persons with ordinary civilised eyesight can only see six—but those with keen sight can see up to nine or even 12. The Red Indians used this as a simple eyesight test for their children. It is said there used to be seven easily visible stars—hence the name—but there are only six bright ones now.

THE SQUARE OF PEGASUS.

From the Pole Star beyond Cassiopeia, the big W, will be seen a large square. This is Pegasus, known to the Chaldeans as a winged horse. It is quite possible to see a handle to this, making it into a big plough—but the handle is the Andromeda group.

Pegasus appears in the north-east in July and August.

ALGOL—THE DEMON'S EYE.

Between Perseus, Andromeda and the Pleiades is a star known to the Arabs as Algol or the Demon's Eye. This star at times shines very brightly but at others become almost invisible ; these changes are regular and known to astronomers.

ARCTURUS AND BOÖTES.

Continue the line through the two end stars of the handle of the Plough and a very bright and beautiful star will be seen—Arcturus. At right angles to this line are five stars—Boötes—the Ox Driver. Legend tells us Boötes was the inventor of the Plough so he was placed in the sky near the Plough.

THE NORTHERN CROWN.

Just beyond Boötes from Arcturus is a Crown of seven stars known as the Northern Crown.

Again, beyond this from Arcturus is Hercules, another rectangular group of seven stars, and here is the Great Cluster containing 3,000 stars in one bunch.

There are, of course, many other constellations and these can be identified from star charts or a planisphere.

NEBULÆ.

In the sword handle under the belt of Orion, the Hunter, a misty patch of light can be seen with a good pair of field glasses. If examined with a powerful telescope it is a most beautiful object.

This nebula is just a whirling mass of matter which in millions of years may become another star—it is a star in embryo.

THE PLANETS.

These can be distinguished from the stars by the fact that they do not twinkle, and that they alter their position. with regard to the other stars.

The stars are suns like our own sun, but the planets are the earths which revolve round our own sun.

Venus is the brightest of the planets, the brightness is believed to be due to it being surrounded by clouds which reflect the sun's light.

Mars shines with a red glare, and is very similar to our own earth, but it has no clouds on its surface.

Jupiter and Saturn with its rings consisting of a countless number of moons can best be examined by the aid of a telescope.

THE DISTANCE OF THE STARS.

To describe the distance of the stars it is necessary to adopt something different from miles as a means of measurement as we should get lost in the colossal number of noughts !

Light travels at 186,000 miles a second and the light from the nearest star takes four years to reach the earth. It is therefore said to be four light years away.

Sirius is 8½, Vega the blue star is 27, the Pole Star, 47, and Arcturus 160 light years away.

THE MILKY WAY.

If a powerful telescope be turned on to the Milky Way—that band of misty light stretching across the sky on fine clear nights—it is seen that it consists of countless stars far, far away. If one thinks that each one of these countless stars may be a sun, larger and hotter than our own sun, perhaps having earths revolving round them, then one begins to realise something of the majesty and grandeur of the universe and incidentally something of the insignificance of one human being.

HOW TO TELL THE TIME BY THE STARS.

Imagine a huge clockface with the Pole Star as the centre, and the long double-ended finger extending from the end star of Cassiopœia to the middle star of the Great Bear or Plough. The Plough end is the pointer of the finger.

Now imagine a dial of 24 hours in which six is horizontally east, 12 vertically above the Pole Star, 18 is horizontally west, and 24 is vertically below the Pole star.

Take the "time" on this clock by the above pointer.

On March 22nd this coincides with sun time and no calculation is necessary.

For each	day	after	March	22nd subtract	4 minutes.
,,	week	,,	,,	,,	½ hour.
,,	month	,,	,,	,,	2 hours.

Example: If position of finger on July 30th is 21, July 30th is 4 months, 1 week, 1 day after March 22nd.

For 1 day	subtract	4 mins.
,, 1 week	,,	½ hour.
,, 4 months	,,	8 hours.
Total:		8 hours 34 mins.

Time is therefore 21 hrs. less 8 hrs. 34 mins., i.e., 12 hrs. 26 mins. or 12·26 a.m. Summer time makes this 11·26 p.m.

TO FIND THE NORTH BY THE STARS.

The Pole Star is always due North. This star is easily discovered by means of the "pointers"—the two stars of the Plough furthest away from the "handle." The two stars are always in a line with the Pole Star.

PHOTOGRAPHY.

IT is said that mustard makers' profits depend on the wasted portions. After viewing the work of the average beginner, we are inclined to apply the dictum to photographic supplies. Daily throughout the year but with tenfold intensity in the summer, people are pointing cameras at each other or at "views," and pressing the trigger, serenely ignorant of the elements of photography or pictorial composition. They send the films (always they use roll films) to the local chemist and await the prints on standard gas-light paper with interest. Of course they are disappointed. One or two of the portraits dare not be shown to the subjects and the views seem short of something. This is exclusive of those which are under exposed, fogged, or mysteriously blank. The wonder is that people continue to carry cameras when they get results of this sort, but there is a fascination about it which is strong enough to master those doubts and hesitations on seeing the prints, and an occasional good result is like the punter's one winner, or the "rabbit's" one well-timed off drive. There can be no doubt, this is his true form, and the rest just bad luck. We all do it at first and many never get beyond it, not from lack of desire but from fear of the technical jargon and intricate knowledge possessed by those amateurs we know to be expert, and the lack of spare time to devote to such a task as acquiring the same grasp.

It is proposed to indicate a middle course, to give a few hints, firstly on the technical apparatus and the proper use of it, and secondly, on composition. It is unnecessary to spend much money or much time, or to study very deeply, to get hold of the principles underlying good amateur holiday photographs. Beyond this lies a world of bromides, colour processes, panchromatics and so on, into which we shall not penetrate. If the bug bites you deeply enough you will discover all about it for yourself, if not, you will be grateful for our omission, and continue to produce jolly intimate studies of your pals and delightful bits of scenery, all in sepia or gaslight tones, and be happy.

CHOICE OF CAMERA.

Modern folding cameras fitted with good lenses have almost eliminated the heavy stand camera for wayfaring work, but a few enthusiasts carry heavy reflex press

cameras. The most popular is the folding fixed focus type, using roll films. It is compact, light, and eliminates focussing difficulties. On the other hand, it is limited in range—for very short distances a special extra lens is required—and roll films do not lend themselves to individual development. Of course, the ideal method is to arrange your exposures so that development becomes standard, in which case the roll films can be developed by time in a closed tank and a dark room is unnecessary. But few of us can attain that ideal and there is a fascination in watching the image come up on the film.

Plates are heavy for most wayfaring, but it is useful to have a camera which can take the dark slide for special occasions and any one which is fitted for plate slides will also take a film pack adapter, and then a choice is available.

The film pack is becoming the favourite medium of many clever photographers. Films are so well made nowadays that the old bugbear of "grain" showing up in enlargements can be ignored. The separate slips of film allow of full individual treatment and if it is desired to develop one or two before the pack has been completely used, the exposed slips can easily be extracted in a dark room without disturbing the remainder.

A further advantage is that a film pack and plate camera is fitted with a focussing screen and though this may be an added complication for a novice, it does add to one's mastery of the camera and reduces the incalculable elements.

The size is important. The larger the negative, the greater is the cost of films and paper, and the camera is necessarily larger and heavier. A small size has everything to recommend it if the lens be a good one, for then crisp enlargements are possible. It is desirable, however, to choose a size which gives contact prints large enough for ordinary purposes, so that enlargements are not essential in all cases. The vest pocket size prints are so tiny that it is impossible to grasp the qualities of a picture or to decipher detail in a contact print and with this size you are almost bound to enlarge.

The $3\frac{1}{4} \times 2\frac{1}{4}$ is admirable for most things. The prints are large enough to be pleasing, it is possible to get crisp enlargements above whole plate size, and the negatives can be used for making contact lantern slides, since the standard size for these is $3\frac{1}{4} \times 3\frac{1}{4}$. To anyone requiring slides for any purpose this is a great

convenience. A $3\frac{1}{4} \times 2\frac{1}{4}$ folding camera of good make with plate slides, film pack adapter and focussing screen is about the handiest all round weapon for a wayfarer of any class. It will fit a coat pocket, is sufficiently light to go in a walking tour kit and is handy in use.

The lens should be the best you can afford. That is all which need be written on this point, for the lens is the most important part of the camera and your pocket should be the only limit when choosing.

The shutter is second only in importance to the lens. A camera by a good maker is safe enough, but if you can afford to do so, it is nice to have one of the special shutters such as the "Compur."

Get the shutter timed, i.e., make certain that when it is set for quarter second it doesn't give one-half. Some are very haphazard.

The makers or the vendors of the camera will give you instructions for working, but often these are superficial —necessarily so. A deliberately spent film of experiments will teach much, and show exactly what are the results of the three main controls—focus, speed of shutter, and aperture stop.

The first is the changing of the distance between lens and negative and decides what will be sharply defined on the print. Thus, if an object at about 6 ft. range is focussed sharply, every thing beyond about 10 ft. will be blurred.

In some roll film cameras there is a scale for focussing at 6 ft., 10 ft., 20 ft., 30 ft. and infinity. This should be checked by experimental negatives.

Plate and film pack cameras also have a scale which is very useful on occasions when there is no time for careful work with the focussing screen. This can be checked by the screen without using a negative. The simplest way of checking a scale is to find a series of similar objects running away in perspective, e.g., lamp posts or standards, at known distances. Having set the camera, focus at the various points on the scale in turn, exposing negatives or checking by the screen.

The speed of the shutter determines the exposure of the negative to the light rays which pass through the lens when the shutter is opened.

Cheap cameras have three adjustments for the shutter, Instantaneous, Bulb and Time. The first usually gives an exposure of $\frac{1}{25}$ second, opening and closing on pressure

of the trigger. The second gives opening on pressure and closing on release. It is useful for exposures of half second to two seconds. The third opens on pressure and closes on a second pressure. It is used for longer exposures.

More expensive cameras have a number of "Instantaneous" speeds. A typical set is $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{10}$, $\frac{1}{25}$, $\frac{1}{50}$, $\frac{1}{100}$.

The exposure is determined by the light on the subject, and there are meters which give the exact exposure necessary. Curiously, few novices carry one of these meters, but many experts use them regularly. There are several types depending on the timing of the darkening of a patch of light-sensitive paper. One which we have used successfully requires no timing, but has a peephole and a graded blue glass scale which is rotated until the subject viewed through the hole looks like a moonlight scene. Then in an aperture at the side can be read the correct exposure for various stops.

These stops are a mystery to many. Between the lens and the shutter is an aperture. It can be reduced by a moving lever above the lens which points to various signs. English cameras have f4, 5·6, 8, 11, 16. Americans have 1, 2, 4, 8, 16, which are equivalents. The relative exposures for the stops is the American numbering. Thus, if the correct exposure at f8 is one second at f11 it is two seconds and at f16, four seconds.

The obvious question is "what are the stops for?"

They serve two purposes.

1. To reduce the amount of light passing through the lens.

This may seem a strange purpose to a novice whose chief trouble is to get enough light, but the point is that in very clear air with bright sunlight, the light is too strong to permit of good definition of detail without giving a negative so dense that the printing would be very long. A smaller aperture permits a longer exposure which gives detail on a negative of normal density.

2. To increase the depth of focus.

We have mentioned focussing and the necessity for good definition. Every lens has a margin, above and below the accurate focus distance, in which objects are still sharply defined. Thus with the camera focussed on an object 15 ft. away, anything at 18 ft. would also be in focus. The margin is known as depth of focus and it becomes greater as the aperture is reduced.

CRIB GOCH, FROM SNOWDON. *Photo by J. R. Ashton.*

DEVELOPMENT AND PRINTING.

Many amateurs rely on other people for the development and printing of their photographs. Some of us who have no dark room have no alternative. Others can get the use of a dark room from a friend, or by joining a club which has one equipped for its members. There are fortunately in most houses a room which can be adapted for temporary use. We have seen good work done in a quondam wine cellar, in a bathroom, in an attic and in a small scullery. The necessities of a dark room are exclusion of all light from exterior, lighting by oil lamp with various glass screens (the ruby lamp) or coloured electric bulb. It is essential that the colouring of the bulb or any glass screens is of the proper type. Ordinary red glass is dangerous ; it allows the actinic rays to pass and will fog your negatives.

Some warmth in winter is useful. Developers have to be kept at a temperature of 60 deg. to 65 deg., or they will not function, and your own comfort is desirable.

Running water is not a necessity though very convenient. If it is not available, a large bowl for washing and two buckets of water will solve the problem.

For developing, the dish must be deep enough to ensure the negative being completely immersed instantaneously, or uneven development results. Another dish for fixing is needed and this should be a large one, so that several negatives can be put in. The reason for this is that fixing takes longer than developing.

The large bowl for washing completes the equipment.

There are several standard developers and they are put up in three forms—concentrated liquid, powder, and tabloid. The last is very convenient.

A graduated glass is needed for measuring quantities of water and developer. Accuracy is essential.

Keep a small quantity of water in the glass ready for diluting the developer to half strength if a negative "flashes up" suddenly, due to over exposure.

Work by average time, but do not be too rigid about it. A little under or over may be exactly right for a particular negative and your own judgment with experience is the best guide.

Longer development will give a "harder" or more contrasty negative, shorter development a "softer" or less contrasty one. Do not confuse "hardness" with sharpness of definition, which is the work of the lens.

For printing, make use of the wide variety of papers available. Different subjects require different papers and the mechanical use of any one paper, however excellent, is unenterprising and inartistic. Experiment freely at first with the three surface finishes, matte, semi-glossy and glossy, with the various grades of "Contrast" and with tones. The experience gained will be invaluable later.

How to preserve prints permanently is a problem to which there are several solutions, depending on the use to which they are to be put. It it is only a matter of a personal photographic diary, then cheap paste-in loose leaf albums are excellent. They can be bought in all sizes so that a collection can be built up on individual lines, allocating albums to districts visited, or to years, or even to separate holidays.

Finally, in all developing, printing and mounting, scrupulous cleanliness is necessary. Carelessness at any stage may ruin otherwise good work.

COMPOSITION.

It is in composition that the photographer has his opportunity of expressing himself and of giving his work the subtle characteristics which all artists give their work, and which mark it with their own individuality as plainly as does a signature.

The ability to spot a picture, to detach it mentally from its surroundings, is one which can be cultivated. Study the work of experts at exhibitions and in publications. Wherever possible, visit the actual place and try to discover why the photograph was taken from that point. Look at the scene on your own viewfinder or screen and observe what has been rejected and what included and why. Try alternative view points and discover why they are not so good as the one chosen. If possible, find a better one !

Pictures are often discovered by chance. We have found them in the driving mirror of a car, which made the selection and framed the picture for us.

The first essential is the eliminating of the actual colours and knowledge of the tones they will produce in a monochrome print. Many beautiful scenes depend on colour entirely and are quite undistinguished on a black and white print. Light and shade, form and line, balance

of masses, these are the ingredients of photographic art. The form and line of objects are more important than their colour.

For instance, a sweep of moorland, though brilliant with purple heather or golden bracken will be a poor subject in itself. But set thereon a figure or two, with a fine mass of cumulus cloud across the sky, and an interesting print will result. If you can find a pool (quite a small one will serve) another picture will present itself. The use of water as a foreground is well-known, but do not fall into the trap of perfect mirror-like reflections which are not always pleasing in the result. Ripples can be very effective and if the wind or current will not produce them, a stone will.

Balance of masses is one of the fundamentals. Given a heavy mass on one side of the picture it must be balanced by a smaller one on the other side. Symmetrical arrangements are rare in nature and should be avoided.

Contrive that the general lines of a picture do not dissipate the interest but lead the eye naturally to the centre, not of the picture but of the study. The main subject of the study is better a little away from the middle. In a study of a mountain in the distance, let the line of a river or a track lead the eye eventually towards the summit and not across to one side.

Do not cut your picture in halves either horizontally by the horizon or vertically by a tree or a figure. The broad general law about horizons is two-thirds from the top or the bottom. A tree or a figure adds interest to the foreground but should be placed close to one side.

When a human figure is introduced, let it be in keeping with the picture, unless a contrast is deliberately chosen for effect in a special study. Thus the gaunt desolation of a scene could be emphasised by a distinctly civilised figure, but another and more homogeneous effect would be secured by a shepherd and a dog.

Let your figure be looking at the scene and not at the camera. It needs tact to persuade people to look away from the camera but the gain is worth a little trouble.

This does not apply to studies of people where the background is secondary. In a landscape or a bit of scenery, the human figure is secondary.

The choice of lighting is one in which many experts reveal themselves. Pay great attention to this point.

Do not accept the old advice about having one's back to the sun. Usually this is the worst possible lighting. It flattens the relief, because there are no shadows.

Remember that shadows reveal depth and solidity of objects. Side lighting is often useful as in the case of sunlight shining through trees where it separates the planes of distance. Generally speaking, the best lighting point is from somewhere to one side and rear, i.e., diagonally across the scene.

This, like all the other hints, is a generalisation to which there are plenty of exceptions, but good practice is necessary before breaking away from the broad lines of experience. As in most human activities, the master is a law unto himself, but he usually lays a sound foundation before embellishing his work with personal variations.

PHOTOGRAPHY.

"A Camera for Company"	Ward Muir, 1923.	7s. 6d.
"First Aid to the Amateur Photographer."	Will R. Rose, 1922.	2s. 6d.
"The British Journal Photographic Almanack."	Annual.	2s. 6d.

FIRST AID FOR THE WAYFARER.

GENERAL CONSIDERATIONS.

THE most hardy of climbers, ramblers, campers and other wayfarers is not immune from accident or sudden illness. There is no spot so remote that he may not some day be faced there with a sudden emergency in which his own well-being or even his own life may depend upon an elementary knowledge of the principles of first aid. If this is true as regards himself it is equally applicable to any companion he may have with him, and who may, in a place far removed from other human aid, be solely dependent on his fellow-wayfarer. In more frequented spots it is even more likely that a case of accident or illness may one day be met with, in the most unexpected fashion, at a turn in a path or over the shoulder of the hill that looms ahead.

There is a considerable responsibility in the writer's opinion resting upon the shoulders of those who organise large parties for climbing, rambling in remote places, camping in the wilds and such like, as is so often done nowadays, and who yet give no thought beforehand to the possibility of some sudden emergency. Faced with this in a lonely place two things may be necessary, besides the all-important one of a cool head, linked with common-sense; these are a definite, if elementary, knowledge of first aid, and secondly, the possession of the necessary simple appliances. The first is often rendered useless by lack of the second, which only forethought will supply.

Suggestions for an outfit for an individual and for a party will be found at the end of this section, and it cannot be too strongly urged that wayfarers, whether travelling singly or in parties, should be prepared in this matter.

HOW TO KNOW WHAT CONDITIONS WE ARE DEALING WITH.

The person we come across accidentally may be UNCONSCIOUS.

This makes matters more difficult than they would otherwise be, as he can tell us nothing. It is well therefore to have in one's mind a list of possibilities and by a process of exclusion to try to arrive at what doctors call a "diagnosis."

He may be suffering from an injury; examine gently but carefully for signs of a wound on the scalp, and also for sign of accident (such as tripping up, striking head against a boulder, fall from higher ground) in the surroundings of the patient. He may be suffering from shock due to other injuries caused by a fall, e.g., fractured leg, injury to spine, etc. Look carefully for these. Observe whether the face is pale and sweating, in which case it is probably shock, or a faint, or might be poisoning due to eating poisonous berries, toadstools, etc. Look for evidence of anything having been eaten. If however, the face is red or dusky in colour the person may be suffering from apoplexy (commonly called a "stroke") —this is more common in people over 40 years of age and of a stout build,—or sunstroke (the weather conditions and local absence of shade, etc., will help here in deciding) or alcoholic poisoning (the breath will give some indication, but it must not be forgotten that a person feeling "queer" may take a "nip" of spirit when collapse is impending from some other cause. Tragic mistakes have occurred before now through failure to remember this fact.

If the patient is making convulsive movements of the limbs and head it may be due to epilepsy, causing a fit, to an apoplectic seizure, or occasionally to certain poisonous fungi and berries.

Such obvious causes of unconsciousness as the condition after rescue from drowning or contact with a "live" electric rail or wire need only be mentioned.

It is well to remember that two conditions may exist at once and lead to confusion unless care is taken in examination of an unconscious person. For example, a man walking on the top of a stone wall may have a fit or apoplectic seizure, fall to the road and strike his head on a stone, causing a scalp wound; he may even sustain a fractured limb. One or other of the conditions present may be overlooked and not treated because of the mind being distracted by the other. See diagrammatic chart.

INJURIES TO LIMBS.

A sprain occurs at a joint and can be distinguished from a dislocation by carefully comparing the joint with the corresponding one on the sound limb, and seeing if the relative position of the bony prominences around the joint to one another has been altered or not. If there is an obvious alteration, then it is not a sprain, and either a dislocation or a fracture is present.

Amongst the important signs that show us that the bone of a limb is broken (fracture) are pain at a definite spot (at or near the site of the fracture), loss of power in the limb, swelling coming on soon after the injury, unnatural outline or shape of the limb (deformity), irregularity of the bone, either perceived or felt when the finger is gently drawn along, e.g., the shin, and unnatural mobility (that is—movement where there should be none normally).

Occasionally creaking made by the movement of the ends of the broken bone upon one another may be heard but should not be tried for by the amateur. A bone is sometimes heard to snap by those witnessing an accident.

NOTES ON TREATMENT OF COMMON AILMENTS AND ACCIDENTS.

(Alphabetically arranged).

Antidotes (for poisons). Alkalis (lime, whitening, etc.) for poisoning by acids: Acids (vinegar, lemon juice) for poisoning by alkalis. Epsom salts for carbolic acid. Weak Condy's fluid for opium. For corrosive poisonings —white of egg, milk or cream, raw eggs beaten up with milk or water, animal or vegetable oil (except in phosphorus poisoning) and tea (strong).

Bandages.—See Fractures.

Bites.—(1) by insects. Apply dilute ammonia. (2) By snakes, rabid animals, or wounds with poisoned weapons. Apply a ligature between the wound and the heart to prevent venous blood flowing out of the limb, by winding a bootlace or strip of handkerchief tightly round the limb or finger, etc.

Encourage bleeding by keeping the injured part low and bathing with warm water.

Cauterise thoroughly if no medical aid is available, using pure carbolic or nitric acids, or a red hot wire or a fusee.

Afterwards apply a clean dressing, treat shock, and remove ligatures from round the limb.

Bleeding.—Very cold or very hot water will often help to staunch bleeding.

If more severe, apply a dressing to the wound and press on the bleeding point with the fingers; if a limb, raise it to lessen the bleeding.

If this does not succeed it is necessary, if the bleeding is in jerks and the blood bright red in colour, to apply a tourniquet.

For this a bandage, pencil or stick, a pad and piece of string are required.

Apply the pad (e.g. rolled up bandage, large indiarubber or a cork) on a suitable pressure point between the bleeding point and the heart, tie a bandage over this and round the limb and lay the stick or pencil over the knot and tie again twice.

Twist the stick until the bleeding ceases and fix the stick by means of a string or bootlace to prevent it untwisting. Loosen after 20 minutes if no doctor is available and leave in position ready to tighten up if bleeding recommences.

Pressure Points.—The chief ones are :

Wrist—both inner and outer side on front of wrist (one being where the pulse is felt) about an inch above the wrist.

Arm—inner side (seam of coat as guide) about half-way down from elbow to shoulder.

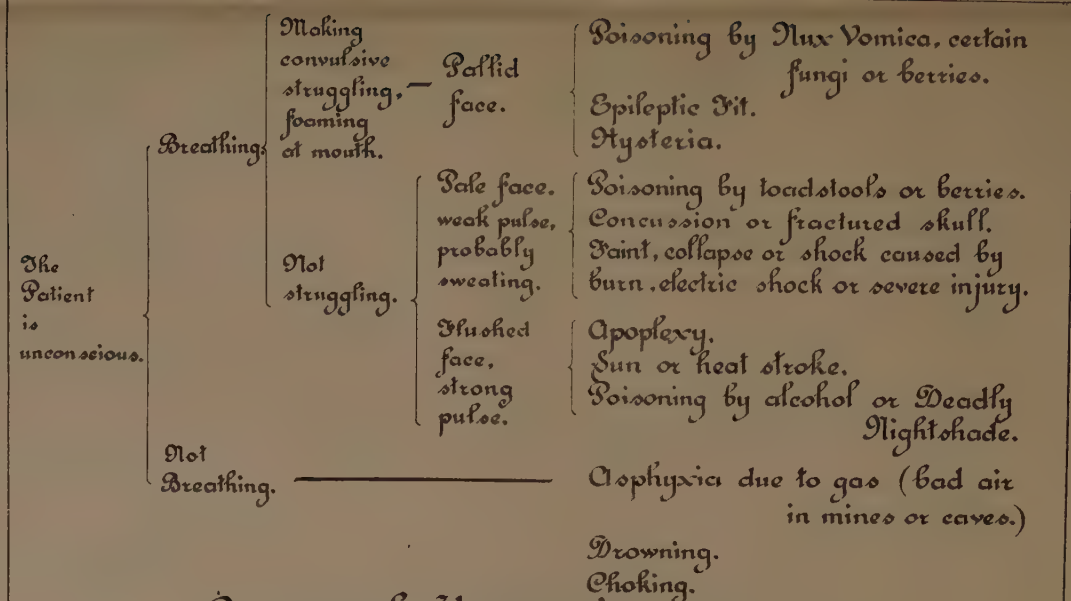
Leg—a large pad of the size of a tennis ball is required This is applied one-third way down from groin to knee on line drawn from centre of groin to inner side of knee. (i.e., on inner side of thigh). As speed is essential with this artery, do not wait to remove clothing.

If the blood is dark red and flows out in a continuous stream, apply bandages or tourniquets, both above and below the wound.

The arteries of the leg and arm can be compressed at the knee or elbow by applying a large pad to the back of the knee or front of the elbow, and bending the limb on itself and tying in this position with a bandage.

Blisters.—Paint with tincture of iodine, let out the fluid by a prick with a needle previously held in a flame and then cooled, cut out a little ring of boric lint to surround the blister and cover with another piece of lint and strapping or bandage (preferably the former).

To prevent blisters the socks should be powdered with a mixture of boric acid powder and starch, and the feet washed after a long walk and carefully dried and powdered, and the socks changed. Wearing two pairs of socks is found a useful preventative by many wayfarers.


The Patient is unconscious.
Breathing
Not Breathing.
Making convulsive struggling, foaming at mouth.
Not struggling.
Pallid face.
Pale face, weak pulse, probably sweating.
Flushed face, strong pulse.
Poisoning by Nux Vomica, certain fungi or berries.
Epileptic Fit.
Hysteria.
Poisoning by toadstools or berries.
Concussion or fractured skull.
Faint, collapse or shock caused by burn, electric shock or severe injury.
Apoplexy.
Sun or heat stroke.
Poisoning by alcohol or Deadly Nightshade.
Asphyxia due to gas (bad air in mines or caves.)
Drowning.
Choking.

-Causes of Unconsciousness.-

Burns.—If slight, causing only pain and reddening of the skin, apply two per cent picric acid solution, or oil or butter, or boric ointment. If more severe, cut away clothing round injured area, cover at once with wool to exclude air, and apply boracic ointment, carron oil or vaseline on strips of lint and bandage. Treat shock.

Choking.—Thump hard between the shoulder blades, if unsuccessful, open the mouth and try to dislodge the foreign body with the finger or fingers—either drawing it out or pushing it into the gullet.

Collar Bone.—Fracture of, is often caused by a fall on the point of the shoulder or on the outstretched hand. The arm on the injured side is partially helpless and the injured person usually supports it at the elbow with his other hand and turns his head towards the injured side. Sometimes the fractured ends can be felt to overlap, the inner fragment over-riding the outer.

Remove the coat, place a pad about two inches thick and four inches across in the armpit.

Gently bend forearm well up, keeping shoulder back, as far as possible, and support it in a "St. John's" sling.

Tightly secure injured limb to the side by a broad bandage round elbow and trunk.

Cuts.—See Wounds.

Dislocations.—The most commonly dislocated joints are the shoulder, elbow, thumb, fingers and lower jaw.

Signs and Symptoms.—Pain, loss of power, numbness, swelling, fixity of the joint, deformity of the limb.

Treatment.—No attempt should be made to reduce the dislocation until a medical man is present. Support the limb in whatever position gives most ease to the patient, bearing in mind the need of lessening the effects of jolting during transport.

Drowning.—Artificial respiration may be required and the best method is first to ascertain if weeds, etc., are obstructing the mouth, then place the patient lying on his face, head on his own forearm, head turned to one side.

Get astride him, facing his head, place your hands with palms on his ribs, thumbs inwards, just below his shoulder blades, and exercise forcible rhythmical pressure on the lower ribs, about 16 to 18 times per minute, until breathing is restored.

Friction should then be applied to the extremities. Afterwards hot blankets and hot coffee (when able to swallow), at the nearest house.

FAINTING.—A faint may be averted sometimes by putting a person's head between his knees when in a sitting posture.

The treatment for a faint consists in bringing more blood to the head by removing tight clothing around the neck, putting the head low and raising the feet, legs and even buttocks, if necessary. Chafe the hands and apply burnt feathers or smelling salts (or sal volatile when able to swallow).

Never give a drink of any kind to an unconscious person.

FITS, or convulsive movements may be due to epilepsy, hysteria, or apoplexy (hæmorrhage in the brain, causing compression), and sometimes by poisoning.

Try to ascertain the cause of the fits.

Support the head and prevent the tongue being bitten if the fit is epileptic. Keep the patient from hurting himself, without unduly restraining the limbs.

Artificial respiration may be needed if the breathing fails.

If the face is red, blue or dusky and the breathing laboured, raise the head and shoulders and turn the head on one side. Endeavour to keep the lower part of the body warm and the head cool.

FRACTURES.—Splints may be improvised from thick rolled newspapers or magazines, maps, thick cardboard, walking sticks, umbrellas, in fact anything firm enough and long enough to keep the joints immediately above and below the broken bone at rest.

In all cases a fractured lower limb should be bandaged to its fellow.

Wooden splints require padding.

Bandages may be improvised from handkerchiefs, belts, straps, braces, neckties, or any piece of linen, calico, cord, etc., that comes to hand.

Splints require bandaging in position above and below the site of the fracture, and the bandages while firmly applied, must not constrict the limb so as to obstruct the circulation.

FRACTURED COLLAR-BONE.—See "Collar-bone."

GRIT in the eye can frequently be dislodged by turning down the lower eyelid, or if in the upper eyelid by pulling it down over the lower eyelid, so that the lower eyelashes brush the inner surface of the upper eyelid.

If this fails, and if a doctor is not available, the upper eyelid should be gently but firmly grasped by the eyelashes, and turned or everted over a match stalk laid horizontally along the eyelid, ½ in. above the roots of the upper eyelashes. The grit can then be removed with the corner of a handkerchief. A good light is essential.

HÆMORRHAGE (See Bleeding).

HEAD INJURIES, include concussion of the brain (stunning) produced by a fall or blow on the head, or by fall on the feet or lower part of the spine; and fractured skull.

If the base of the skull is fractured, blood or a clear fluid may issue from the ear channel, blood from the nose, or blood may pass down into the stomach and then be vomited. The fracture may involve the orbit, causing a blood-shot eye.

POISONS.—Corrosive poisons (e.g., carbolic and other acids, ammonia and other alkalis) stain the mouth and lips.

See under Antidotes for appropriate remedies. No emetic should ever be given in cases where the mouth is burned or stained.

If there is no staining an emetic should be given.

Commonly used emetics are :—

(1) A tablespoonful of mustard in a tumblerful (half pint) of lukewarm water, and repeated until vomiting occurs, or

(2) two tablespoonfuls of salt in lukewarm water (half pint) and repeated until vomiting occurs.

Putting two fingers to the back of the throat may help to induce vomiting.

In all cases where the patient is not insensible, give milk, raw egg beaten up with milk or water, cream and flour mixed, animal or vegetable oil (except in phosphorus poisoning) and tea.

SHOCK AND COLLAPSE.—May be due to injury to the abdomen, extensive wounds and burns, fractures, lacerated

wounds, severe crush or hæmorrhage: also fright and anticipation of injury, heart weakness, fatigue, want of food, and certain poisons, including alcohol.

Treatment.—Attend to injuries, remove tight clothing. Keep patient warm. If patient can swallow and there is no fear of uncontrollable bleeding, hot drinks, or sal volatile (a teaspoonful in half tumbler of water) may be given.

See also under "Fainting."

Splints may be improvised from a thick folded newspaper or a magazine, walking stick or umbrella, wood from a fence, etc. See under "Fractures."

If made of wood they will require padding before use.

Sprains.—See introduction under injuries to limbs.

Sprained Ankle.—Apply a bandage tightly over the boot, placing its centre on the sole at the instep, crossing it on the front of the ankle, and carrying it round and round the ankle, where it is to be firmly tied. Wet the bandage after application—it is thereby tightened.

Stretchers.—An improvised stretcher may be made as follows:—

(1) Turn the sleeves of a coat inside out, pass two strong poles through them; button the coat. The patient sits on the back of the coat and rests against the front bearer.

If a long stretcher is required, two or three coats must be used.

The poles are more readily kept apart by lashing strips of wood across at right angles at each end.

(2) Make holes in the bottom corners of a couple of sacks and pass stout poles through them.

(3) A rug, piece of sacking, strong blanket or tarpaulin is spread out and two stout poles rolled up in the sides. Two bearers are needed on each side, grasping the ends and middle of the pole in their hands; they walk sideways.

(4) A shutter, hurdle, or similar piece of wood may be used, covered with straw, bracken, hay or clothing.

Tourniquet.—See under "Bleeding."

WOUNDS.—In all cases of wounds the points to remember are :—

1. To stop the bleeding.
2. To protect the wound against germs.

The first is dealt with under "Bleeding."

Avoid contamination of the wound by the introduction of germs from hands, clothes, etc.

Remove foreign bodies, such as broken glass, bits of clothing, hair, etc., seen in the wound : do not search for foreign bodies you cannot see.

If the wound is obviously dirty and surgical aid is not at once procurable, wash away as much dirt as possible by pouring over it water that has been previously boiled. Wash the surrounding skin away from, and not towards the wound. A wound heals best if kept dry.

Apply tincture of iodine all over the skin around the wound, and to the wound (if only a small one).

Cover with a clean, dry, soft and absorbent dressing, such as sterile gauze, a first—field dressing, or boracic lint. In an emergency clean unprinted paper, such as inside of an envelope may be used. Always cleanse your own hands before touching a wound, preferably by washing in water previously boiled, or by applying tincture of iodine, to the fingers if no water is available. Do not touch the surface of the dressing with your fingers.

Place a pad over the dressing unless foreign bodies are in the wound, or unless there is a fracture.

Apply a bandage firmly over the pad.

Afford support to the injured part.

Do not disturb a clot of blood over a wound as this serves to keep blood in and germs out.

Do not apply sticking plaster or ointment to a recent wound.

TRANSPORT—Methods of Carrying.

Two-handed Seat.

This method may be used for carrying a helpless person.

Two bearers face each other, one on each side of the patient and stoop.

Each passes the forearm nearest to patient's head under the back just below the shoulders, taking hold of the patient's clothing if possible,

They slightly raise the patient's back and then pass their other forearms under the middle of his thighs and clasp hands, one palm being turned up, and the other down.

The bearers rise and step off, the right-hand bearer with the right foot and the left-hand bearer with the left foot.

The Human Stretcher.

This is carrying a person in a recumbent or semi-recumbent posture.

Two bearers face and stoop one on each side of the patient. They "shake hands" with their left hands under the patient's hips.

The bearer on the patient's left passes his right hand and forearm under the patient's head, neck and shoulders.

The bearer on the right passes his right hand and arm under the patient's legs.

They rise together and carry patient feet foremost by short paces.

Three-handed Seat.

For use when a patient can use his upper limbs, and requires one lower limb supporting.

Two bearers face each other behind the patient. If the left lower limb requires support, the bearer to the patient's right grasps his own left forearm with his right hand and the other bearer's right forearm with his left hand. The bearer to the left grasps the first bearer's right wrist with his right hand. This leaves his left hand free to support the patient's left leg. (For right leg, substitute "right" for "left" and vice versa all through).

The bearers stoop down and the patient sits on their hands, the bearers rising and stepping off, with the patient putting one arm around the neck of each bearer.

The bearers do not step off with the same foot.

Four-handed Seat.

Each bearer grasps his own left wrist with the right hand, and each other's right wrist with their left hands.

In this seat there is no free hand to assist the patient.

Support by a Single Helper.

Put your arm round the injured person's waist, grasping his hips, and place his arm round your neck, holding his hand with yours.

FIRST AID OUTFITS.

1. For an Individual.

A "first field dressing" or alternatively a 2 in. roller bandage, and a few square inches of boric lint in clean protective wrapper (not waxed paper) or a small tin sealed with adhesive plaster.

An iodine "ampoule" or very small bottle of iodine tincture.

A couple of safety pins.

A small spool of adhesive strapping ½ in. in width.

A small tin containing boracic powder.

Some stimulant or restorative, e.g., sal volatile.

2. For a Party.

Two triangular bandages, (it may be useful to have one with bandaging diagrams printed on).

Two or three roller bandages of assorted sizes and compressed preferably.

Tincture of iodine
Boric Lint
Safety Pins
Adhesive Strapping
Boracic Powder
} as for I. above.

Boracic ointment or small bottle of Carron Oil (for burns)

Some stimulant or restorative, e.g., sal volatile.

"Blue Bag" or ammonia in well corked bottle for stings.

A pair of blunt-nosed scissors.

3. For a Camp or Tour.

Additional to II :—

Cascara Tablets (constipation).
Aspirin Tablets (toothache and neuralgia).
Quinine Sulphate Tablets (colds).
Picric Acid Solution (burns).
Half-oz. Cotton Wool.

SOME LEGAL POINTS FOR WAYFARERS.

HIGHWAYS AND FOOTPATHS.

THE public have a right to be on a road or path for the purpose of going from one point, where they have a right to be to another such point. They have no right to use the road for any other purpose, such as playing games, or picnicking. Some judges have held that beauty spots as such are not necessarily points where the public have a right to be, but in one case where a mountain peak was involved as one end of the path, the right of way was upheld.

The public may acquire the right of way by actual dedication or implied "dedication"; this simply means that at some period the owner (*a*) has actually dedicated the path to the public or (*b*) may be presumed to have done so by his allowing the public to use the path. An individual may acquire a private right of way to pass over land adjacent to his own. Careful distinction is made between the two.

The Prescription Act of 1832 enacted that 20 years user (act of using) establishes a presumptive right and 40 years an absolute right in the case of an individual and a private road. These rights are strictly limited to the individual but have an interest for the public since the Rights of Way Bill, so far unsuccessfully introduced to Parliament several times (1905–1914 and 1923) seeks to make the same principles apply to public ways.

A public right of way may be one of three kinds (*a*) for pedestrians only; (*b*) for men and horses; (*c*) for carriages, etc.; and it should be noted that a public footpath may coincide with a private occupation or cart road. In such cases the familiar sign "Private Road" is misleading. The notice should read "Private Road. Public Footpath." There is a correct example of this in the Derwent Valley (Derbyshire) on the east side of the reservoirs and another in the Chew Valley near Greenfield (Yorks.)

Cycles are regarded legally as wheeled traffic and a cyclist riding on a footpath or bridle way is committing an offence similar to riding on the raised footway at the side of a road. In practice, however, objection is rarely made and indeed, it would be difficult to cycle over most footpaths.

Little or no difficulty arises with class (*c*) the carriage roads. These have been created by Act of Parliament, but classes (*a*) and (*b*) include footpaths, bridle paths, and mountain and moorland tracks, many of which are the subject of legal actions. The term footpath will be used below to imply all these types.

A footpath right exists where the path is set out in the Enclosure Award or where there is an implied or actual dedication. It does not depend on the public user, no matter how long proved. Evidence of long user may be held to imply dedication, but this in turn may be rebutted by the owner, proving that dedication could not have taken place during the period covered by the evidence. Much of the land in England is entailed under family settlements. An individual is not in absolute ownership and therefore cannot have the power to dedicate a path. This defence has been a great stumbling-block to the Footpath Societies and other bodies seeking to prove a right of way. But a Judge may presume the implied dedication to have taken place prior to the family settlement or in some interval between two such settlements.

The Crown Trustees or a Corporation may dedicate. A copyholder cannot do so without the consent of the Lord of the Manor.

There can be no dedication to restricted classes, i.e. to the inhabitants of one village, etc. But an owner may dedicate a path to the public under conditions, e.g., annual ploughing up. Where the dedication is implied, the owner and his predecessors must have ploughed the path annually as long as it has been in use. If a farmer has not previously ploughed, he cannot begin to do so.

An owner may not increase the obstructions on a path, e.g., make the existing stiles more difficult or erect new ones. He may not reduce the width of the path.

In some actions the owner has set up the defence that previous erection of obstructions has been acquiesced in by the public, so it is necessary to raise objections whenever a case is observed.

An owner may not erect obstructions on a roadside waste. If an owner places barbed wire at the side of the footpath he must shield it in such a way that the passer-by cannot be damaged by it. If a wayarer finds barbed wire in a dangerous position, he should report it to the District or Town Council who are empowered to direct

its removal or alteration. If the owner ignores their request, they can then have the work done, and charge him with the costs.

A footpath can only cease to exist when it is destroyed by Act of God, or by an Act of Parliament, or by an order of Quarter Sessions. Hence, the maxim "once a highway, always a highway." It does not cease to exist by lack of use or by overgrowth of grass. If a path becomes "founderous," i.e., unsafe, the public have the right of deviating until they reach a safe portion of the path. This right stands even if such a deviation damages crops, etc.

An Enclosure Award by Act of Parliament extinguishes rights of way, except those set out therein. If a disputed path is not shown on the Enclosure Award, it is therefore necessary to prove a subsequent dedication.

The Enclosure Award is embodied in an Act of Parliament enclosing a common, and usually has a plan attached. It may be inspected at the office of the Clerk to the Parish Council or the Clerk of Peace to the County.

A landowner wishing to divert a footpath must obtain permission from the Highway Authority, and then apply to the Justices of the Peace. Two are appointed to inspect the path and make certain that the new path will be more convenient for the public. Notices of the proposed diversion are erected at each end of the path and any objections to it must be lodged 14 days before Quarter Sessions. The application is there considered. If there are no objections an Order of the Court is made. The new path must be opened before the old one is closed, unless good cause can be shown for the contrary

The duty of preserving public rights of way is with the District Councils; but if they fail in their duty, then the Parish Council may petition the County Council to act. It has often happened in the past that public bodies have been apathetic or afraid to move against a powerful landowner. This has brought into existence a number of societies for the protection of footpaths. In cases where the wayfarer suspects an encroachment on the public rights he should consult the local society, if any, or the Commons and Footpath Society, or the Peak District and Northern Counties F. P. S., if in the area indicated in its title. This latter society has paid much attention to signposts. The duty of erecting these lies with the County and District Councils, but unless pressed they rarely move. The society has erected over 50 boards on public tracks in the Peak District.

Every wayfarer is familiar with the notice "trespassers will be prosecuted." There are variations, designed to inspire more fear, or, very few, to express more truth. When the wayfarer finds such a board at the entrance to a footpath where he is certain of the right of way, he should ignore it and proceed on his way. If not certain he would be well advised to make enquiries of some authority. In any case, he should report the incident to the Footpaths Society.

If he finds stiles built up or obstructions erected on a public way, he is within his legal rights in removing such obstructions. But care must be used. The slightest unnecessary damage will render him liable to an action for "malicious damage." The wiser course is to investigate and report to the authorities or Societies. There is one type of board which may scare away the doubtful. This will be found at the side of a path leading through a wood or over a moor, and states "These woods (or moors) are private. Trespassers will be prosecuted." Cunningly placed, it conveys the impression that the path is private too. It may be ignored with impunity, and an effective retort is to erect through the agency of the Footpaths Society or local authorities, a notice board declaring the path public.

When the "trespassers will be prosecuted" board is on private land, it must be respected, though it is legally incorrect. A trespasser cannot be prosecuted, but he may be sued for alleged damages committed by him.

The picking of wild fruit, such as blackberries and bilberries is not regarded as damage, and mushrooms may be taken unless they are being cultivated.

The owner may also apply for an injunction to restrain him from repeating the trespass, unless he accedes to the formal request through a solicitor for a written apology and an undertaking to refrain from trespass on that same area in the future. As the action for injunction is an expensive one for the defendant as well as the plaintiff, it is well to make the apology and give the required undertaking.

But these rigours of the law are not usually invoked against the innocent wayfarer. If he has inadvertently trespassed and is met by the owner or his keeper, soft words may be used with success, and an offer of a nominal sum to cover any possible damage he may have done, not as a bribe, is strictly legal. Sometimes the trespasser is ordered to go back the way he has come, but he need not

do this. He can be required to go by the shortest route to the nearest public way. The owner or keeper can use sufficient force to induce an unwilling person to leave his ground but if unnecessary force is used, an action may be taken by the trespasser against him for assault.

The Law of Property Act, 1925, has not materially altered the position of the ordinary wayfarer, but in respect of certain commons where the public has access for air and exercise, certain acts, e.g., unauthorised camping, etc., become criminal offences.

It has long been felt that the exclusion of the public from uncultivated moors and mountains is an anti-social act. Many landowners are amenable and public-spirited enough to raise no objection to people using such land for recreation, but others have adopted a stubborn attitude. Lord Bryce introduced a Bill "to secure to the public the right of access to mountains and moorlands." It was blocked in successive Parliaments before the war and a recent attempt by Mr. P. Gilchrist Thomson in 1924 was nullified by a dissolution. Briefly the Bill provides that no person shall be excluded from using uncultivated mountain or moorland for the purpose of recreation, or scientific or artistic study. It would be the wayfarer's charter and would prevent the public being excluded from beautiful places in the wilder parts of England and Scotland.

Meanwhile much has been done by the National Trust to preserve the beauty spots from desecration and to secure them as national preserves, by purchase. The National Trust for Places of Historic Interest or Natural Beauty was founded in 1895, mainly by the efforts of three individuals—Sir Robert Hunter, Miss Octavia Hill and Canon Rawnsley. It was incorporated in 1907 by Act of Parliament; it is empowered to hold for the benefit of the nation lands and tenements (including buildings) of beauty or historic interest. It now owns more than 150 properties in various parts of the country, the acreage of which extends to nearly 30,000 acres. Its activities extend from the Farne Islands, off the coast of Northumberland to a headland in Anglesey, to the Roman Camp near West Runton on the Norfolk Coast. The Fell and Rock Climbing Club in 1924 bought 3,000 acres of the Lake District as a War Memorial and presented it to the National Trust. Lord Leconfield had previously presented the summit ground of Scawfell Pike (above 3,000 ft.) as a Borrowdale War Memorial, so now the whole central

mountain mass, including Scawfell, Great Gable, Kirkfell, Glaramara, and Esk House is safe. By the wish of the then owner, the strip of land which bears the Styhead pass was excluded from the Fell and Rock Club's purchase.

A large part of the Hindhead Commons in Surrey has also been placed under the guardianship of the Trust. At present the Trust is endeavouring to acquire the land surrounding the ancient monument of Stonehenge, as well as 750 acres of moorland near Sheffield, besides various other schemes in different parts of the country.

The map of National Trust properties is included in this guide by courtesy of the Trust.

BIBLIOGRAPHY.

"Commons, Forests and Footpaths"	Lord Eversley, 1910.
"English Peasantry and the Enclosure of Common Fields."	G. Slater, 1907.
"Preservation of Open Spaces and of Footpaths and Other Rights of Way."	Sir Robert Hunter.
"A Nation's Heritage"	H. W. Rawnsley, 1920. 6s.
Publications, Reports, etc., of Societies :—	
Commons and Footpath Preservation Society.	Secretary : L. W. Chubb, 7, Buckingham Palace Gardens, London, S.W.1.
Peak District and Northern Counties Footpath Preservation Society.	Secretary : T. Boulger, 53, Brown Street, Manchester.
National Trust	Secretary : S. H. Hamer, 7, Buckingham Palace Gardens, London, S.W.1.
"The Hill Paths, Drove Road and Cross Country Routes in Scotland."	W. A. Smith, 1924. 2s. 6d.
"Legal Points for Ramblers"	A. Blair, 1924. 1s.

ROAD PASSES

over 1,000 feet in altitude in England and Wales.

Dartmoor.

Yelverton—Princetown, 1,100.
Tavistock—Princetown, 1,079.
Moretonhampstead—Two Bridges, 1,252.

Exmoor.

South Molton—Simonsbath. 512.
Wheddon Cross—Exford, 1,191.
Porlock—Lynton, 1,428.
Lynton—Simonsbath, 1,320.

Black Mountains and Brecon Beacons.

Talgarth—Crickhowell, 1,060.
Merthyr Tydfil—Abergavenny, 1,234.
Merthyr Tydfil—Brecon, 1,400.
Bryn Amman—Trecastle, 1,618.

Pembroke and Carmarthen.

Haverfordwest—Cardigan, 1,047.
Carmarthen—Cardigan, 1,043.

Mid Wales.

Rhayader—Aberystwyth, 1,350.
Crossgates—Newtown, 1,094.
Knighton—Newtown, 1,204.
Clun—Knighton, 1,130.
Llangynog—Bala, 1,398.
Dinas Mawddwy—Bala, 1,790.

North Wales.

Bala-Festiniog, 1,507.
Dinas Mawddwy—Dolgelley, 1,178.
Festiniog—Dolwyddelen, 1,263.
Festiniog—Pentre Voelas. 1,590.
Ruthin—Cerrig y Druidion, 1,146.

NORTH WALES—*continued.*

*Ruthin—Mold, 944.
Denbigh—Pentre Voelas, 1,523.
Ruthin—Wrexham, 1,085.
Ruthin—Llangollen, 1,133.
Capel Curig—Caernarvon, 1,169.
Capel Curig—Bangor, 1,000.

Shropshire.

Bishop's Castle—Shrewsbury, 1,149.
Ludlow—Cleobury Mortimer, 1,108.

Derbyshire.

Macclesfield—Buxton, 1,690.
Leek—Buxton, 1,590.
Cheadle—Hartington, 1,113.
Ashbourne—Buxton, 1,184.
Bakewell—Buxton, 1,130.
Rowsley—Chesterfield, 1,108.
Buxton—Whaley Bridge, 1,265.
Chapel-en-le-Frith—Castleton, 1,403.
Chapel-en-le-Frith—Edale, 1,650. (Mam Nick).
Chapel-en-le-Frith—Hayfield, 1,077.
Hayfield—Glossop, 1,057.
Glossop—Ashopton, 1,680.
Ashopton—Sheffield, 1,182.
Hathersage—Sheffield, 1,254.

Lancashire-Yorkshire.

Manchester—Penistone, 1,450.
Manchester—Holmfirth, 1,615.
Oldham—Huddersfield, 1,271.
Bacup—Burnley, 1,384.
Hebden Bridge—Keighley, 1,425.
Colne—Gisburn, 1,024.
Grassington—Pateley Bridge, 1,326.
Kettlewell—Wensley, 1,392.
Ingleton—Hawes, 1,421.
Hawes—Muker, 1,726.

---

*Ruthin-Mold included although not quite 1,000 ft. because it is a true pass over a range.

Westmorland, Durham, Northumberland.

Bowes—Brough, 1,436.
Brough—Middleton-in-Teesdale, 1,578.
Middleton-in-Teesdale—Alston, 1,962.
Moorcock—Kirkby Stephen, 1,194.
Wearhead—Nenthead, 2,050.
Wearhead—Allendale, 1,464.
Nenthead—Allendale, 1,620.
Alston—Hexham, 1,547.
Alston—Penrith, 1,889.

Lake District.

Kendal—Penrith, 1,304.
Windermere—Patterdale, 1,476.
Keswick—Lorton, 1,043.
Keswick—Buttermere, 1,096.
Seatoller—Buttermere, 1,191.

Cheviots.

Newcastle—Otterburn, 1,000.
Otterburn—Jedburgh, 1,376.

Isle of Man.

Douglas—Ramsey (via Snaefell), 1,384.

MOUNTAINS OVER 2,500 ft. IN ENGLAND AND WALES.

Name.	Height.	Most Convenient	
		Villages.	Stations.
Cheviot Group.			
The Cheviot (1)	2676	Wooler.	Wooler (L. & N. E. R.)
Bellyside Crag	2656		
(Nameless)	2547		
Cairn Hill	2545		
Pennine Group.			
Cross Fell	2930	On the West—	
Do.	2893	Dufton.	Appleby (L.M.S. and L.N.E.) or
Do.	2739	Milburn.	Long Marten (L.M.S.)
Black Dub	2637		
Little Dun Fell	2761		
Knock Fell	2604	On the East—	
Do.	2582	Forest and Frith.	Middleton-in-Teesdale (L.N.E.),
Mickle Fell (2)	2591		Wear Head (L.N.E.).
Do.	2547	On the North—	
Fkirwith Fell	2562	Alston.	Alston (L.N.E.)
Sallow Hill	2563		

(1) Highest point in Northumberland.

(2) Highest point in Yorkshire.

LAKE DISTRICT.

North of Derwentwater.

Skiddaw	3054	Keswick.	Keswick (L.M.S.).
Low Man	2837	Do.	Do.
Saddleback	2847	Do. or Threlkeld.	Threlkeld (L.M.S.).

West of Derwentwater.

Grisedale Pike	2593	Stair.	Keswick (L.M.S.).
Sand Hill	2525	Braithwaite.	Braithwaite (L.M.S.).
Eel Crag	2649		
Grassmoor	2791		
(Nameless)	2533		or
Do.	2749	Buttermere	Cockermouth (L.M.S.).
Sail	2500		

North of Wastwater.

High Stile	2643		
Green Gable	2643		
Great Gable	2949		
Kirk Fell	2631		
Pillar Fell	2927		
Pillar Rock	2500	Wasdale Head.	Drigg, Ravenglass, or Book (L.M.S.).
Steeple	2681		
Do.	2746		
Haycock	2619		
Red Pike	2707		
Do.	2629		

Name.	Height.	Most Convenient	
		Villages.	Stations.
East of Wastwater.			
Slight Side	2501		
Scafell	3162		
Scafell Pike (3)	3210		
Broad Crag	over 3000	Wasdale Head or Seathwaite.	Drigg, Ravenglass, or Boot (L.M.S.)
Ill Crag	over 3000		Keswick (L.M.S.)
Lingmell	2649		
Great End	2984		
Allen Crags	2572		
Glaramara	2562		
Langdale and Coniston Group.			
Dow Crag	2555	Coniston.	Coniston (L.M.S.).
Coniston Old Man (4)	2633		
Fairfield	2611		
Great How Crags	2625		
Wetherlam	2502		
Carrs	2525	Little Langdale.	Windermere or Coniston (L.M.S.).
Grey Friar	2537		
Crinkle Crags	2733		
Long Top	2816		
Shelter Crags	2613		
Bow Fell	2960		
Hanging Knott	over 2500	Upper Langdale (Farms).	Windermere (L.M.S.).
Esk Pike	2903		
High White Stones	2500		

(3) Highest point in England ; also in Cumberland. (4) Highest point in Lancashire.

Helvellyn Group.			
Red Screes	2541	Ambleside.	Windermere (L.M.S.)
Dove Crag	2541		
Hart Crag	2698		
Fairfield	2863	Grasmere.	Windermere (L.M.S.)
Great Rigg	2513		
St. Sunday Crag	2756		
Gravel Pike	2577		
Dollywagon Pike	2810		
Helvellyn (5)	3118	Patterdale.	Penrith, Penruddock, or Troutbeck (L.M.S.)
Browncove Crags	over 2500		
Striding Edge	over 2500		
Catchedicam	2917		
Low Man	3033		
White Dodd	2832		
Raise	2889		
Stybarrow Dodd	2756		
Watson's Dodd	2584		
Great Dodd	2807		
High Street Group.			
Stony Cove	2502		
Thornthwaite Crag	2560		
Harter Fell	over 2500	Mardale.	Shap (L.M.S.).
The Knowe	2509		
High Street	2663		
Kidsty Pike	2560		
High Raise	2634		

(5) Highest point in Westmorland.

Name.	Height.	Most Convenient Villages.	Most Convenient Stations.
WALES.			
BERWYN GROUP.			
Cader Fronwen	2568	On the East— Llanarmon-dyffryn-ceiriog.	Llansantfraid-dyffryn-ceiriog *via* Chirk (G.W.).
Cader Berwyn	over 2500	On the West— Llandrillo.	Llandrillo (G.W.).
Moel Sych (6)	2713		
†CARNEDD GROUP.			
Drum	2528		
Llwydmor	2745		
Yr Aryg	2875	Aber or Llanfairfechan.	Aber or Llanfairfechan (L.M.S.)
Bera Mawr	2587		
Bera Bach	2500		
Foel Fras	3091		
Foel Grach	3195		
Carnedd Llewellyn	3484		
Yr Elen	3151	On North-West— Bethesda.	Bethesda (L.M.S.)
Carnedd Dafydd	3426		
Braich Du	3184	On South-East— Capel Curig or Ogwen (Farms).	Bettws-y-Coed (L.M.S.)
Craig Du	3169		
Pen Helig	2731		
Pen Llithwrig	2621		
GLYDER GROUP.			
Carnedd y Filiast	2694		
Moel Perfedd	2750		
Foel Goch	2726	Llanberis or Pen-y-Gwryd (Farms or Hotel).	Llanberis.
Elydir Fawr	3029		
Elydir Fach	2564		
Y Garn	3104		

†This group is very favourable for high level traverses, *e.g.*, Ogwen to Conway.

(6) Highest point in Denbigh and Montgomery.

GLYDER GROUP—*continued.*			
Tryfan	3010	Capel Curig or Ogwen (Farms)	Bettws-y-Coed (L.M.S.)
Glyder Fawr	3278		
Glyder Fach	3261		
Caseg Ffraith	2642		
Esgair Felen	2750		
Gallt yr Ogof (7)	2499		
SNOWDON GROUP.			
Crib Goch	3023	N.—Llanberis.	Llanberis (L.M.S.)
Crib y Ddysgyll	3493	S—Beddgelert.	
(Carnedd Ugain)		N.E.—Penygwryd.	Beddgelert (Snowdon Highland)
Y Wyddfa (8)	3560	E.—Nant Gwynant.	
Lliwedd	2947	S.E.—Quellyn.	Rhyddu (Snowdon Highland).
SIABOD GROUP.			
Moel Siabod	2860	Capel Curig or Dolwyddelen.	Bettws-y-Coed, Dolwyddelen.
Moelwyn Mawr	2527	Ffestiniog or Beddgelert.	Ffestiniog (L.M.S.), Beddgelert (Snowdon Highland).
MERIONETH GROUP.			
Arenig Fawr	2860	Llanuwchllyn.	Llanuwchllyn.
Aran Benllyn	2901	Dinas Mawddwy	Dinas Mawddwy
Aran Mawddwy (9)	2970	or	or
Craig y Ffynon	2557	Drws-y-Nant.	Drws-y-Nant (G.W.)
Mynydd Moel	2804	Dolgelley.	Dolgelley (G.W.)
Cader Idris	2927		
BRECON GROUP.			
Carmarthen Van	2632	Llandovery.	Penwyllt.
Cairn Du	2863		
Brecon Beacon (10) (Pen-y-Fan)	2907	Brecon.	Brecon.
Do.	2704		
Bryn Feg	2608		Torpanton.
Gwaun Rhydd	2509		Tal-y-bont.
Do.	2502		
BLACK MOUNTAINS.			
Pen-y-Gaden Fawr	2624	Crickhowell.	Talgarth.
Pen-y-Manllwyn	2522		
Waun Fach	2660		

(7) May be included by counting the cairn.

(8) Highest peak in England and Wales and Carnarvonshire. (9) Highest point in Merionethshire.
(10) Highest point in Brecknock.

Mountains in Scotland over 4,000 feet.

Scotland has 543 peaks over 3,000 ft. in height.

Peak.	Height.	Centre.
Ben Nevis	4406	Fort William.
Carn Mor Dearg		
Aonach More	3999	
Aonach Beg	4060	
Cairn Gorm	4084	Aviemore.
Ben Muich Dhui	4296	
Do.	4244	
Cairn Toul	4241	
Angels Peak	4095	
Wells of Dee	4149	
Do.	4061	
Do.	4036	
Braeriach	4248	

With acknowledgments to the *Rucksack Club Journal.*

JOHN HEYWOOD LTD., Printers, 121, Deansgate, Manchester.

OUT-O'-DOORS

The Monthly Magazine for every Lover of the Countryside.

WHATEVER your pastime—rambling, cycling, photography, or the study of nature—wherever you go, and however you go—you will find *Out-O'-Doors* an inspiration month by month. Brimful of illustrations and interesting articles by popular writers, *Out-O'-Doors* is the open sesame to the glorious countryside. Buy a copy to-day, or send 3/6 for twelve monthly issues, post free.

EACH 3D MONTH

OUT-O'-DOORS

100 RUSHOLME RD., MANCHESTER

C.D.F.

MAPS FOR RAMBLERS

A Note on the "One Inch" Ordnance Survey Series.

Where is the Rambler who does not soon become a map-lover? And who can appreciate more readily than he a map which clearly shows, besides towns, railways, and main roads, the unfrequented footpaths, lanes, by-ways, woods and streams which are his chief delight?

Details such as these and many others of interest to the walker can only be shown satisfactorily when a scale of at least one inch to the mile is used; and it should be noted that the only series of maps covering the whole of Great Britain on this scale are those published by the Ordnance Survey.

These "One-inch" maps are issued in several forms, of which the "Popular Edition," mounted on linen and folded in covers at half-a-crown a sheet, is a universal favourite. Each normal sheet of this series measures 27 by 18 in., covering an area of 486 square miles. Contours are given at 50 ft. intervals; objects of antiquarian interest are indicated in Old English or Roman characters, and each sheet contains a mass of useful information not readily to be obtained elsewhere.

Special maps on the "one-inch" scale are published of all the noted tourist districts. These sheets usually cover an area of 800 square miles, and are obtainable at three shillings each at all the principal booksellers and railway bookstalls.

Members of Rambling Clubs should write to the Director-General, Ordnance Survey Office, Southampton, for a booklet containing full particulars, index diagrams and coloured specimens of the Ordnance Survey Small Scale Maps, which will be forwarded free on mentioning this handbook.

JAMBOREE HIKE TENT

Weight, 2½ lbs. in case.

The above has been thoroughly tested and tried, and we can therefore recommend same with confidence.

Size—6ft. 9ins. × 5ft. × 4ft. high.
Extra Pure Lightweight Egyptian Cloth.

Post £2 6s. 9d. Free.

RUC

No. 1, 8/10
,, 2, 5/9
,, 3, 3/6
,, 4, 5/6

SACS

No. 5, 8/-
,, 6, 26/-
,, 7, 13/9

EVERYTHING FOR THE CAMPER.

Camping Lists Free. All Profits Help Scouting.

THE Scout Shop
IMPERIAL HEADQUARTERS

25, Buckingham Palace Rd., LONDON, S.W.1
34-5, Wormwood Street, E.C.2
352-4, Gray's Inn Road, W.C.1
21, High Street, PECKHAM, S.E.15

The Manchester Boy Scouts Association

10, St. Mary's St., Deansgate,
MANCHESTER

have a large and varied selection of

RUCKSACKS
HAVERSACKS
COMPASSES
HIKE TENTS
SLEEPING BAGS
PRIMUS STOVES

Price List free on application.

GUINEA
Lightweight Tent

This compact, Lightweight tent is the very thing for those whose pleasures or business takes them off the beaten track. It can easily be packed in a rucsack. The wall enables the whole floor space to be used. Material: Special lightweight white cloth.

Size: 7 ft. long, 4 ft. 6 ins. wide, 3 ft. 6 ins. high, 9 ins. walls; weight 4¾ lbs..... **21/-**

GROUND SHEET to cover whole floor space..... **9/6**

All kinds of Tents and Camp Equipment on Sale or Hire. We Pay Carriage on all goods. Tents made to Customers' Specification.

Thos. Black & Sons (Greenock) Ltd.

(Contractors to Admiralty and War Office.)

Regd. Office & Works: 25, CATHCART STREET, GREENOCK.

GLASGOW: 5, Royal Exchange Sq. EDINBURGH: 87, Hanover St.
LONDON: 15, Bury St., W.C.1.

Tents can be seen at above Addresses. Send for Free Illustrated Catalogue.

"BIRCHFIELD" GUEST HOUSE

In the Heart of the Peak District.

"BIRCHFIELD," the new Guest-House at Hope, Derbyshire, stands 730 feet above sea level and is charmingly situated on the southern slopes of Win Hill, commanding a wonderful view of the beautiful Hope Valley. The surrounding country with its endless panorama of mountain and moorland scenery, unsurpassed in England, is teeming with Historical interest. Chatsworth House, Haddon Hall, and Peveril Castle are within easy reach. As a centre for exploring the glories of the Peak District, "Birchfield" is perfect. There are 10 acres of lovely grounds, which include two fine tennis courts and a cricket pitch. The house is lit throughout by electricity, is centrally heated and contains six bathrooms.

Board and Residence 50/- per week.

Apply—**Mr. H. S. EVASON, "Birchfield," Hope, DERBYSHIRE.**

'Phone: Hope 46. (Stamp.)

RAMBLERS' HOLIDAYS

SUNNY GUEST HOUSES
IN THE BEST SCENERY
IN ENGLAND, IRELAND,
SCOTLAND, WALES AND
THE CONTINENT

Organized Walking
Excursions

Social Evenings in
Good Company

Apply now :—

HOLIDAY FELLOWSHIP LTD.

"HIGHFIELD," GOLDER'S GREEN ROAD
LONDON, N.W.11

FOUNDED 1893.

INCORPORATED 1910.

The Co-operative Holidays Association

THE Association has delightful Holiday Guest-Houses in many of the most attractive districts in Great Britain, including :—

WESTWARD HO ! Devon.
SHANKLIN, Isle of Wight.
ONICH, Western Highlands.
BRAY, Ireland.
GRASMERE, WHITBY, BARMOUTH, PEEL, etc.

Also on the Continent at :—

DINAN, Brittany.
FINHAUT, Valaisan Alps.
GIESSBACH, Bernese Oberland.
LUGANO, Italian Lakes.
BOPPARD, on the Rhine.
LOEN, Norway.
BAVARIAN ALPS.

The Association is not a profit-making body and exists to provide inexpensive, social and recreative holidays for active people.

Full particulars and illustrated programme will be sent on application to the Booking Department, C. H. A., Birch Heys, Fallowfield, Manchester.

CAMTORS
TRADE MARK

EASILY PACKED INTO A RUCKSACK

THE "ITISA" TENT
Packs the size of a pound of tea!

THE "CAMTORS" SLEEPING BAG.
Warmer than two blankets; lighter and less bulky than one.

CAMP & SPORTS
CO-OPERATORS LTD.,
2 & 3, GREVILLE STREET, LONDON, E.C.1.
(Close to Farringdon Street Station.)

Illustrated List O.G. post free.

THE

NATIONAL TRUST

FOR PLACES OF

HISTORIC INTEREST or NATURAL BEAUTY

Appeals for Annual Subscribing Members of Ten Shillings and upwards to help in the work of acquiring and maintaining interesting and beautiful properties for the enjoyment of the public.

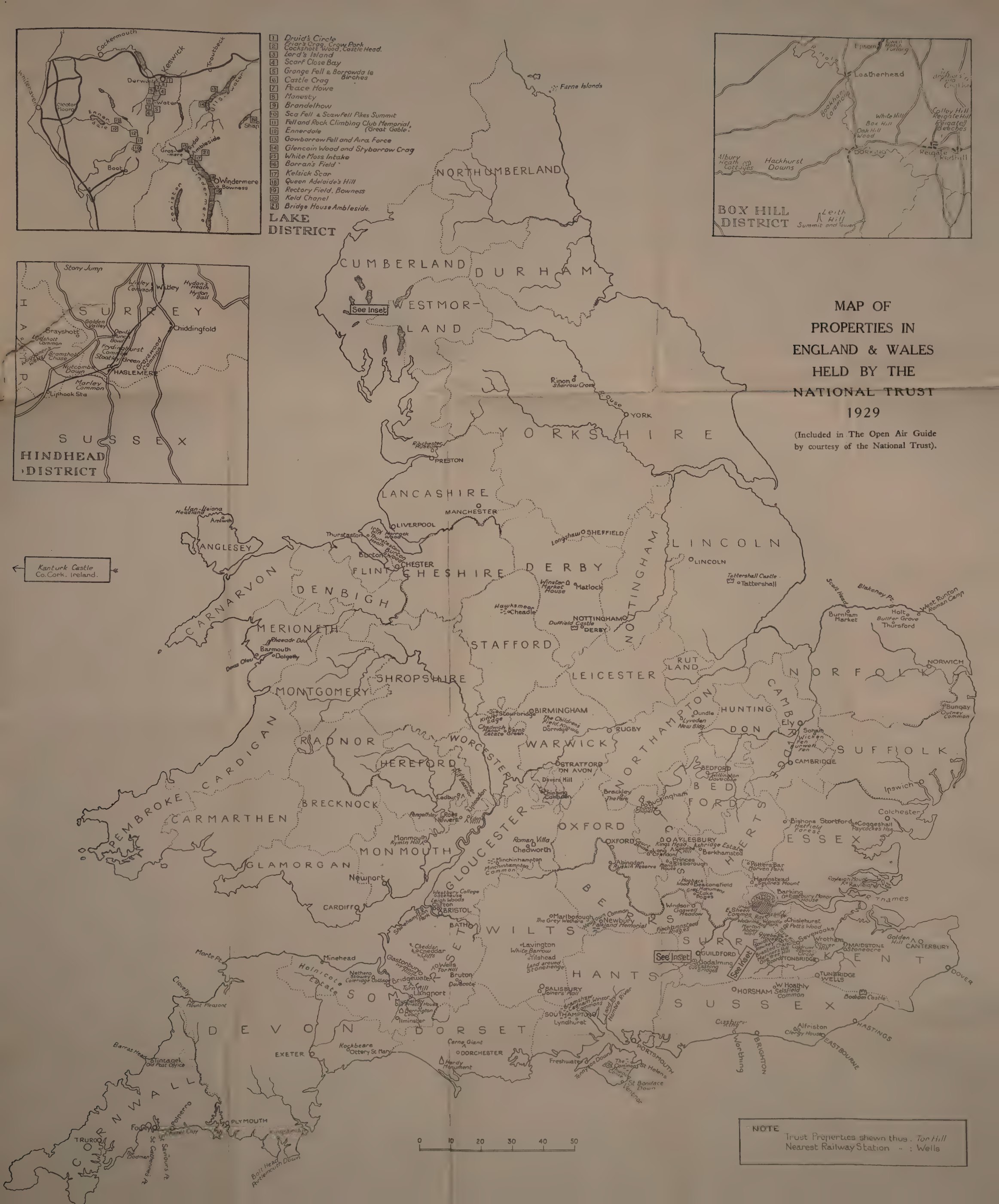
Application should be made to the Secretary, at 7, Buckingham Palace Gardens, London, S.W.1.

MAP OF PROPERTIES IN ENGLAND & WALES HELD BY THE NATIONAL TRUST 1929

(Included in The Open Air Guide by courtesy of the National Trust).

1. Druid's Circle
2. Friar's Crag, Crow Park
3. Cockshott Wood, Castle Head.
4. Lord's Island
5. Scarf Close Bay
6. Grange Fell & Borrowdale Birches
7. Castle Crag
8. Peace Howe
9. Manesty
10. Brandelhow
11. Sca Fell & Scawfell Pikes Summit
12. Fell and Rock Climbing Club Memorial, (Great Gable)
13. Ennerdale
14. Gowbarrow Fell and Aira Force
15. Glencoin Wood and Stybarrow Crag
16. White Moss Intake
17. Borran's Field
18. Kelsick Scar
19. Queen Adelaide's Hill
20. Rectory Field, Bowness
21. Keld Chapel
22. Bridge House Ambleside.

LAKE DISTRICT



NOTE
Trust Properties shewn thus . Tor Hill
Nearest Railway Station - : Wells

KU-356-308